CONESTOGA-ROVERS
& ASSOCIATES

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July 19, 2010

Reference No. 039611

Mr. Rosauro del Rosario
EPA Project Manager/Coordinator
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Dear Mr. del Rosario:

Re: Revised Specification - 100% Final Design Report
Himco Site, Elkhart, Indiana (Site)

Conestoga-Rovers & Associates (CRA) has prepared this letter on behalf of the Himco Site Trust (Trust) as a follow-up to our conference call with the United States Army Corps of Engineers (USACE) on July 15, 2010.

As requested by USACE, CRA has revised specification 02055 (Soils), Part 2.2.A.2 as follows:

"2. ASTM D2487 Group Symbol: Soils classified as SC, ML, CL, ML-CL, MH and/or CH."

The revised page of the specification is attached for your files.

Should you have any questions on the above, please do not hesitate to contact us.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Denise Gay Quigley, P. Eng., PE, LEP

DG/nrs/25
Encl.

cc: Doug Petroff, IDEM (3 copies)
Gary Toczylowski, Bayer HealthCare (electronic)
Tom Lenz, Bayer HealthCare (electronic)
Kevin Howe, USACE (2 copies)
Alan Van Norman, CRA (electronic)
Douglas Gatrell, CRA

3. Wire, steel, cast iron, cans, drums, or other foreign material.

4. Materials containing hazardous or toxic constituents at hazardous or toxic concentrations.

2.2 ROOTING ZONE

A. Type S1:

1. Free of rocks larger than 3 inches, very soft clays, swelling clays, or fine uniform sands that may be difficult to compact.

2. ASTM D2487 Group Symbol: Soils classified as SC, ML, CL, ML-CL, MH and/or CH.

3. USDA textural chart soil classified a non-sandy loam, silt, silt loam, clay loam, silty clay, or clay.

2.3 TOPSOIL

A. Type S2:

1. Friable loam neither of heavy clay nor of very light sandy nature.

2. Reasonably free of roots, rocks, or lumps larger than 1 1/2 inches, weeds, vegetation, and seeds of noxious weeds.

3. Acidity Range (pH): 6.1 to 7.8, determined in accordance with ASTM D4972.

4. Containing minimum 3 percent and maximum 20 percent organic matter determined in accordance with ASTM D2974.

5. Containing minimum agronomic concentrations consistent with the State of Indiana's Soil Conservation Service for ammonium, cation exchange capacity, nitrate (as NO_3), percent calcium, hydrogen, magnesium, and potassium, and phosphorus content.

6. Capable of supporting growth of vegetation.

2.4 CLAY

A. Type S3:

1. Free of rocks larger than 2 inches, organic matter, inorganic clays of high plasticity in accordance with ASTM D2487, swelling clays, or very soft clays.

2. ASTM D2487 Group Symbol CL.

3. Compactable to 90 percent SMDD.

Rev. as of May 2011

TABLE 6.1

SUMMARY OF CONSTRUCTION QUALITY ASSURANCE & QUALITY CONTROL TESTING
CQAP
HIMCO SITE
ELKHART, INDIANA

Work Task Component to be Tested	Type of Test	Standard	Frequency of Test Quality Control (General Contractor)	Frequency of Test Quality Assurance (CQA Official)	Criteria
A. Landfill Cover					
1. Common Fill					
a) Material	• Proof roll with heavy equipment	• None	• Before final grading	• Before final grading	• Stable under load
	• Grain Size Distribution	• ASTM D422	• 1 per 10,000 CY	• 1 per 15,000 CY	• Refer to Spec Section 02055
	• Chemical Analysis [1]	• Various	• 1 sample per source and for each change in material source	• N/A	• IDEM Residential and Industrial Default Closure Levels (Closure Criteria)
b) Placement	• Final Elevation	• Survey	• After placement	• None	• Tolerance of plus or minus 0.1 foot vertical and 0.5 foot horizontal from design elevation
2. Rooting Zone Layer					
a) Material	• Grain Size Distribution	• ASTM D422	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Maximum dry density	• ASTM D698	• 1 per 10,000 CY	• 1 per 20,000 CY	• Refer to Spec Section 02055
	• Chemical Analysis [1]	• Various	• 1 sample per source and for each change in material source	• N/A	• IDEM Industrial Default Closure Levels (Closure Criteria)
b) Placement	• Final Elevation	• Survey	• After placement	• None	• Tolerance of plus or minus 0.1' vertical and 0.5' horizontal from design elevation
3. Topsoil					
a) Material	• Grain Size Distribution	• ASTM D422	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• pH	• ASTM D 4972	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Organic Matter	• ASTM D 2974	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Ammonium (as NH4-N)	• SCS approved lab [2]	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Cation Exchange Capacity	• SCS approved lab [2]	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Nitrate (as NO3)	• SCS approved lab [2]	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Percent Calcium	• SCS approved lab [2]	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Percent Hydrogen	• SCS approved lab [2]	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Percent Magnesium	• SCS approved lab [2]	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Percent Potassium	• SCS approved lab [2]	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Phosphorus Content	• SCS approved lab [2]	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Chemical Analysis [1]	• Various	• 1 sample per source and for each change in material source	• N/A	• IDEM Residential and Industrial Default Closure Levels (Closure Criteria)
b) Placement	• Final Elevation	• Survey	• After placement	• None	• Tolerance of plus or minus 0.1' vertical and 0.5' horizontal from design elevation
	• Thickness	• Visual	• Continuously during placement	• Continuously during placement	• Minimum of 6 inches

TABLE 4.1

SUMMARY OF CONSTRUCTION QUALITY ASSURANCE & QUALITY CONTROL TESTING
CQAP
HIMCO SITE
ELKHART, INDIANA

Work Task Component to be Tested	*Type of Test*	*Standard*	*Frequency of Test Quality Control (General Contractor)*	*Frequency of Test Quality Assurance (CQA Official)*	*Criteria*
4 Vegetative Cover					
a) Seed Mixture	• N/A	• N/A	• Ensure seed mixture meets requirements in Spec Section 02921	• To be determined by CQA Official	• Refer to Spec Section 02921
b) Mulching Material	• N/A	• N/A	• Ensure mulching material meets requirements in Spec Section 02921	• To be determined by CQA Official	• Refer to Spec Section 02921
c) Fertilizer	• N/A	• N/A	• Ensure fertilizer meets requirements in Spec Section 02921	• To be determined by CQA Official	• Refer to Spec Section 02921
B. <u>Swales</u>					
1. Clay					
a) Material					
	• Maximum Dry Density	• ASTM D698	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Soil Classification	• ASTM D2487	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Particle Size	• ASTM D422	• 1 per 5,000 CY	• 1 per 10,000 CY	• Refer to Spec Section 02055
	• Chemical Analysis [1]	• Various	• 1 sample per source and for each change in material source	• N/A	• IDEM Industrial Default Closure Levels (Closure Criteria)
b) Compaction	• Number of Passes	• Observation	• Continuous	• Continuous	• Determined by compactor and desired percentage coverage
	• Depth of Layers	• Observation	• Continuous	• Continuous	• First layer 9 inches, second and subsequent layers no greater than 6 inches (loose depth)
	• Final Elevation	• Survey	• After placement	• None	• Tolerance of plus or minus 0.1' vertical and 0.5' horizontal from the design elevation

TABLE 4.1

SUMMARY OF CONSTRUCTION QUALITY ASSURANCE & QUALITY CONTROL TESTING
CQAP
HIMCO SITE
ELKHART, INDIANA

Work Task Component to be Tested	Type of Test	Standard	Frequency of Test Quality Control (General Contractor)	Frequency of Test Quality Assurance (CQA Official)	Criteria
C. **Miscellaneous**					
1. Passive Ventilation Trench					
a) Material- Aggregate (A1)	• Grain Size Distribution	• IDOT 904.03(e)	• 1 sample per source and for each change in material source	• N/A	• Refer to Spec Section 02060
b) Material- Geotextile (G1)	• Unit Weight	• ASTM D5261	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Ultra Violet Degradation	• ASTMD4355	• Once a month	• N/A	• Refer to Spec Section 02074
	• Tensile Strength	• ASTM D4632	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Elongation at Break	• ASTM D4632	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Puncture Strength	• ASTM D4833	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Permittivity	• ASTM D4491	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Trapezoid Tear Strength	• ASTM D4533	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Apparent Opening Size (AOS)	• ASTM D4751	• Once a month	• N/A	• Refer to Spec Section 02074
2. Culverts and Conduits					
a) Material -Aggregate/Rip Rap (A3)	• Grain Size Distribution	• IDOT 904.04(e)	• 1 sample per source and for each change in material source	• N/A	• Refer to Spec Section 02060
b) Material- Aggregate/Bedding and Cover (Aggregate A4)	• Grain Size Distribution	• IDOT 904.03(e)	• 1 sample per source and for each change in material source	• N/A	• Refer to Spec Section 02060
c) Material- Aggregate/ Channel Lining and Aprons (A5)	• Grain Size Distribution	• IDOT 904.03(e)	• 1 sample per source and for each change in material source	• N/A	• Refer to Spec Section 02060
d) Material- Steel Culvert Pipe	• Material	• ASTM A760/A760M	• Manufacturer to complete	• N/A	• Refer to Spec Section 02610

TABLE 4.1

SUMMARY OF CONSTRUCTION QUALITY ASSURANCE & QUALITY CONTROL TESTING
CQAP
HIMCO SITE
ELKHART, INDIANA

Work Task Component to be Tested	*Type of Test*	*Standard*	*Frequency of Test Quality Control (General Contractor)*	*Frequency of Test Quality Assurance (CQA Official)*	*Criteria*
3 Roads					
1. Access Road					
a) Material- Aggregate (A4)	• Grain Size Distribution	• IDOT 904.03(e)	• 1 sample per source and for each change in material source	• N/A	• Refer to Spec Section 02060
b) Material- Geotextile (G1)	• Unit Weight	• ASTM D5261	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Ultra Violet Degradation	• ASTMD4355	• Once a month	• N/A	• Refer to Spec Section 02074
	• Tensile Strength	• ASTM D4632	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Elongation at Break	• ASTM D4632	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Puncture Strength	• ASTM D4833	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Permittivity	• ASTM D4491	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Trapezoid Tear Strength	• ASTM D4533	• Once every 100,000 sq ft	• N/A	• Refer to Spec Section 02074
	• Apparent Opening Size (AOS)	• ASTM D4751	• Once a month	• N/A	• Refer to Spec Section 02074
2. Construction Entrance					
a) Material- Aggregate (A2)	• Grain Size Distribution	• IDOT 904.04(e)	• 1 sample per source and for each change in material source	• N/A	• Refer to Spec Section 02060

Notes
N/A - Not Applicable
CY- cubic yard
1 - Chemical Analyses to include:

Parameter	*Extraction/Preparation (USEPA SW-846)*	*Analysis*
TCL Volatile Organic Compound	5035	8260B
TCL Semi-Volatile Organic Compound	3540C/3550B	8270C
Pesticide	3540C/3550B	8081A
PCB	3540C/3550B	8082
Herbicides	3540C/3550B	8151A
TAL Metals	3050B or 3051	6010B/7000 Series
Cyanide	9013	9010 or 9012A

TCL - Target Compound List
TAL - Target Analyte List
2 - Indiana Soil Conservation Service (SCS) approved laboratory

Rev. as of May 2011

TABLE 3.1

SUMMARY OF CONSTRUCTION QUALITY ASSURANCE INSPECTIONS
CQAP
HIMCO SITE
ELKHART, INDIANA

Work Task Component to be Inspected	*Items to be Checked During CQA Inspection*	*Type of Inspection*	*Frequency of Inspection*	*Submittals to CQA Official*
A. Refuse				
1. Refuse Grading Layer	• has the refuse been properly compacted with a sheepfoot compactor	• visual (min. 5 passes)	• continuous	• none
	• is the refuse free from irregular surface changes	• visual, check Spec Section 02225	• continuous	• none
B. Landfill Cover				
1. Common Fill				
a) Material	• is the sub-base properly compacted	• proof roll	• continuous	• none
	• does the common fill meet Specs	• check Spec Section 02055	• each source of common fill	• supplier's certifications and QC test results
	• does the imported common fill contain unsuitable material including:	• visual	• continuous	• none
	a) frozen material or material containing snow or ice			
	b) trees, stumps, branches, roots, or other wood or lumber			
	c) wire, steel, cast iron, cans, drums, or other foreign materials			
	d) materials containing hazardous or toxic constituents at hazardous or toxic conditions			
	e) rocks larger than 3 inches, very soft clays, swelling clays, or fine uniform sands			
b) Compaction	• has material been properly compacted with a sheepsfoot compactor	• visual	• continuous	• none
	• has material had a minimum of 5 passes	• visual	• continuous	• none
2. Rooting Zone Layer				
a) Material	• does imported rooting zone layer meet Specs	• check Spec Section 02055	• each source of rooting zone layer	• supplier's certifications and QC test results
	• does imported rooting zone layer material contain unsuitable material including:	• visual	• continuous	• none
	a) frozen material or material containing snow or ice			
	b) trees, stumps, branches, roots, or other wood or lumber			
	c) wire, steel, cast iron, cans, drums, or other foreign materials			
	d) materials containing hazardous or toxic constituents at hazardous or toxic conditions			
	e) rocks larger than 3 inches, very soft clays, swelling clays, or fine uniform sands			
b) Placement	• has the lift been placed to the proper depth	• visual, check Spec Section 02055	• continuous	• none
c) Compaction	• has material been proof-rolled with a smooth-drum roller	• visual	• continuous	• none
	• has material had a minimal compaction	• visual	• continuous	• none

SUMMARY OF CONSTRUCTION QUALITY ASSURANCE INSPECTIONS
CQAP
HIMCO SITE
ELKHART, INDIANA

Work Task Component to be Inspected	*Items to be Checked During CQA Inspection*	*Type of Inspection*	*Frequency of Inspection*	*Submittals to CQA Official*
3. Topsoil				
a) Material	• does imported topsoil meet Specs	• check Spec Section 02055	• each stockpile of topsoil	• supplier's certifications and QC test results
	• does imported topsoil material contain unsuitable material including: a) frozen material or material containing snow or ice b) trees, stumps, branches, roots, or other wood or lumber c) wire, steel, cast iron, cans, drums, or other foreign materials d) materials containing hazardous or toxic constituents at hazardous or toxic conditions e) rocks or lumps larger than $1^{1/2}$ inches	• visual	• continuous	• none
b) Placement	• has the lift been placed to the proper depth	• visual, check Spec Section 02055	• continuous	• none
	• has material been placed using bulldozer	• visual	• continuous	• none
c) Compaction	• has material been graded in place	• visual	• continuous	• none
4. Vegetative Cover	• does the fertilizer meet Specs	• check Spec Section 02921	• prior to delivery	• supplier's certifications and QC test results
	• does the seed mixture meet Specs	• check Spec Section 02921	• prior to delivery	• supplier's certifications and QC test results
	• does the mulching material meet Specs	• check Spec Section 02921	• prior to delivery	• supplier's certifications and QC test results
	• does the water used meet Specs	• check Spec Section 02921	• prior to delivery	• none
C. Swales				
1. Clay				
a) Material	• does the material meet Specs	• check Spec Section 02055	• prior to delivery	• supplier's certifications and QC test results
	• does the material contain unsuitable materials including: a) frozen material or material containing snow or ice b) trees, stumps, branches, roots, or other wood or lumber c) wire, steel, cast iron, cans, drums, or other foreign materials d) materials containing hazardous or toxic constituents at hazardous or toxic conditions e) rocks larger than 2 inches, organic matter, inorganic clays of high plasticity, swelling clays, or very soft clays	• visual	• continuous	• none

TABLE 3.1

SUMMARY OF CONSTRUCTION QUALITY ASSURANCE INSPECTIONS
CQAP
HIMCO SITE
ELKHART, INDIANA

Work Task Component to be Inspected	*Items to be Checked During CQA Inspection*	*Type of Inspection*	*Frequency of Inspection*	*Submittals to CQA Official*
D. Soil Gas				
1. Passive Ventilation Trench (PVT)	• properly located	• survey, check Spec Section 02318	• continuous during work	• none
	• does installation meet Specs	• check Spec Section 02318	• continuous	• none
	• does material meet Specs	• check Spec Sections 02060, 02074 and 02318	• upon delivery to Site	• manufacturer's & supplier's certifications
2. Soil Gas Monitoring Probes				
b) Abandonment	• locate existing soil gas monitoring probes	• visual	• continuous	• none
	• does probe abandonment meet Specs	• check Spec Section 02524	• continuous	• gas probe strat logs
	• does material meet Specs	• check Spec Section 02524	• upon delivery to Site	• manufacturer's certificates
a) Installation	• properly located	• visual	• continuous	• none
	• does installation meet Specs	• check Spec Section 02524	• continuous	• gas probe strat logs
	• does material meet Specs	• check Spec Section 02524	• upon delivery to Site	• manufacturer's certificates
E. Miscellaneous				
1. Riprap	• does material meet Specs	• check Spec Section 02060	• prior to delivery	• supplier's certifications and QC test results
	• proper location and depth	• survey	• continuous	• none
2. Culverts and Conduits	• does installation follow proper alignment	• survey and visual	• continuous	• none
	• does material meets Specs	• check Spec Section 02060 and 02610	• upon delivery to Site	• manufacturer's & supplier's certifications
3. Fencing and Gates	• is alignment correct	• survey and visual	• continuous	• none
	• does installation meet Specs	• check Spec Section 02821	• continuous	• none
4. Access Road	• does installation follow proper alignment	• survey and visual	• continuous	• none
	• does material meets Specs	• check Spec Section 02060 and 02074	• upon delivery to Site	• manufacturer's & supplier's certifications

SECTION 01100

SUMMARY

1.1 SECTION INCLUDES

A. Description of Project.

B. Location.

C. Access to Site.

D. Scope of work.

E. Description of work.

F. TRUST-supplied products.

G. Contract Times and Milestones.

H. Drawings.

I. CONTRACTOR use of Site.

J. Measurement and payment.

1.2 DESCRIPTION OF PROJECT

A. The property contains a landfill that accepted waste such as household refuse, construction rubble, medical waste, and calcium sulfate between 1960 and 1976. The landfill was closed with a 1-foot layer of sand overlying the layer of calcium sulfate in 1976.

1.3 LOCATION

A. The Site is located at the intersection of County Road 10 and the John Weaver Parkway (former Nappanee Street Extension) in Elkhart County, Indiana. The Site covers approximately 100 acres in the Northeast ¼ of Section 36, Township 38 North, Range 4 East in Cleveland Township, of which approximately 65 acres is the landfill proper.

1.4 ACCESS TO SITE

A. Access to the Site is available through a gate in the southeast corner off of County Road 10.

B. Make all necessary arrangements with the authorities having jurisdiction for the movement of CONTRACTOR material and equipment to and from the Site over public roadways.

1.5 SCOPE OF WORK

A. The Works to be performed under the Contract consists of waste relocation at specific areas along the perimeter of the existing landfill, construction of an earthen soil cover system with ancillary features such as stormwater diversion berms and access roads. The Works also includes installation of a passive ventilation trench and soil gas monitoring probes along the south and southeast sections of the landfill cover.

1.6 DESCRIPTION OF WORK

A. The Works includes but is not limited to the following:

1. Project startup including mobilization to the Site.

2. Development, implementation, and maintenance of a Site-specific Health and Safety Plan.

3. Provision and maintenance of temporary facilities and controls.

4. Leachate/groundwater management.

5. Off-site disposal, as necessary, of surface debris.

6. Waste relocation from four areas around the perimeter to low lying locations within the landfill footprint, consistent with the Contract Drawings.

7. Construction of an earthen cover system, including ancillary features, consistent with the Contract Drawings.

8. Construction of a passive ventilation trench.

9. Installation of perimeter soil gas monitoring probes.

10. Demobilization and closeout.

1.7 TRUST-SUPPLIED PRODUCTS

A. TRUST's Responsibilities:

1. Arrange for and deliver TRUST reviewed product data and Samples to CONTRACTOR.

2. Arrange and pay for product delivery to the Site.

3. On delivery, inspect products jointly with CONTRACTOR.

4. Submit claims for transportation damage and replace damaged, defective, or deficient items.

B. CONTRACTOR's Responsibilities:

1. Review TRUST reviewed product data and Samples.

2. Receive and unload products at the Site; inspect for completeness or damage, jointly with TRUST.

3. Handle, store, install, and finish products.

1.8 CONTRACT TIMES AND MILESTONES

A. Perform the Works in accordance with the following Contract Times and Milestones:

1. The Works at the Site shall be commenced within 15 days after the Pre-Construction Inspection.

2. The Works shall be substantially completed on or before July 30, 2011.

3. The Works shall have a Pre-Final Construction Inspection no later than 30 days after the completion of construction.

4. The Works shall be fully completed and ready for final payment on or before August 30, 2011.

5. The Works shall have a Final Construction Inspection 30 days after completion of work identified in the Pre-Final Construction Inspection Report.

1.9 DRAWINGS

A. Drawings issued with and forming part of the Contract Documents are listed below:

Drawing No.	*Rev. No.*	*Date of Drawing or Latest Revision*	*Title*
---	---	June 2010	Title Sheet
1	---	June 2010	Existing Conditions and Control
2	---	June 2010	Site Plan
3	---	June 2010	Excavation Plan
4	---	June 2010	Top of Waste & Grading Layer
5	---	June 2010	Top of Final Grades
6	---	June 2010	Soil Gas System Plan
7	---	June 2010	Stormwater Drainage Plan
8	---	June 2010	Erosion and Sediment Control Plan
9	---	June 2010	Details I
10	---	June 2010	Details II
11	---	June 2010	Details III
12	---	June 2010	Details IV
13	---	June 2010	Cut/Fill Areas

B. Perform the Works in accordance with the Drawings issued "Approved for Construction" by ENGINEER. Such Drawings will be issued to CONTRACTOR with the Notice to Proceed and will consist of bid Drawings revised as required by ENGINEER and additional Drawings if required by ENGINEER.

C. Revised "Approved for Construction" Drawings may be issued from time to time by ENGINEER and such Drawings will supersede previous revisions.

1.10 CONTRACTOR USE OF SITE

A. Access to Site: Limited to TRUST, ENGINEER, and CONTRACTOR.

B. Construction Operations: Limited to areas noted on the Drawings.

C. Hours of Operation: Limit on-Site hours of operation to the hours of 7:00 a.m. to 6:00 p.m.

D. When unfavorable weather, soil, drainage, or other unsuitable construction conditions exist, continue operations which will not be adversely affected by such conditions. Do not construct or cause to be constructed any portion of the Works under conditions which would adversely affect the quality of the Works, unless special means or precautions are taken to perform the Works in a proper and satisfactory manner.

1.11 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01200

PRICE AND PAYMENT PROCEDURES

1.1 SECTION INCLUDES

A. Measurement and payment.

B. Applications for Payment.

C. Contract modification procedures.

1.2 MEASUREMENT AND PAYMENT

A. Payment for the Works will be made in lump sums and unit prices in accordance with the Agreement.

B. Measurement and payment requirements applicable to the Works are delineated in the individual Sections and complement the criteria of this Article.

C. ENGINEER will take all measurements and compute quantities accordingly. Notify ENGINEER sufficiently in advance of operations to permit required measurements for payment. Assist by providing necessary equipment, workers, and survey personnel as required. Provide reasonable and necessary opportunities and facilities for making measurements.

D. Measurement for Unit Price Work: As specified in individual Sections. Quantities indicated in the Schedule of Prices are for bidding and contract purposes only and are approximate. Quantities of material furnished and/or work performed as verified by ENGINEER determine payment.

E. Measurement for Lump Sum Work: ENGINEER will measure or quantify the amount of work eligible for progress payment purposes. Items will be measured in units such as time, weight, volume, area, or linear means, or combination as appropriate as a completed item or unit of the Works. Such measurements will serve as a basis for estimating percentage payments for partially completed work.

F. Measurement Devices:

1. Weigh Scales: Inspected, tested, and currently certified by the applicable state or governing agency.

2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.

3. Metering Devices: Inspected, tested, and currently certified by the applicable state or governing agency.

G. Payment for Each Item Includes: Full compensation for furnishing labor, supervision, material, tools, equipment, plant, transportation, services, health and safety, submittals, and incidentals for performance and completion of the Works in complete accordance with the Contract Documents; erection, application, installation, completion, or construction of an item of the Works; overhead

and profit; and all other miscellaneous items for which separate payment is not provided under other Items of the Schedule of Prices. All work not specifically set forth as a separate pay Item in the Schedule of Prices shall be considered as a subsidiary obligation of CONTRACTOR and all costs in connection therewith shall be included in the amounts and prices stipulated in the Schedule of Prices. CONTRACTOR shall properly and fairly distribute indirect costs to each pay Item. Final payment for work governed by unit prices will be made on the basis of the actual measurements and quantities approved by ENGINEER multiplied by the unit price stipulated in the Schedule of Prices. Final payment for work governed by lump sum prices will be made on the basis of the applicable lump sum prices stipulated in the Schedule of Prices.

H. Non-payment for Rejected Products: Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.
3. Products not completely unloaded from the transporting vehicle.
4. Products placed beyond the lines and levels of the required Works.
5. Products remaining on hand after completion of the Works.
6. Loading, hauling, and disposing of rejected products.

1.3 APPLICATIONS FOR PAYMENT

A. Submit each Application for Payment on the form furnished in the Contract Documents (Exhibit E). Obtain electronic version from ENGINEER.

B. Submit 1 signed original of each Application for Payment.

C. Execute certification by signature of authorized officer.

D. List each authorized Change Order on the Application for Payment, listing Change Order number and dollar amount as for an original item of the Works.

E. Prepare Application for Final Payment as specified in Section 01700.

1.4 CONTRACT MODIFICATION PROCEDURES

A. Changes in the Works or the requirement for extra work will be made by ENGINEER in accordance with the General Conditions and with the change procedures as specified herein.

B. Field Order: ENGINEER will advise of minor changes in the Works not involving an adjustment to the Contract Price or the Contract Times as authorized by the General Conditions by issuing supplemental instructions in the form of a Field Order. Promptly execute such minor changes and supplemental instructions.

C. Proposal Request: ENGINEER may issue a proposal request, which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications,

and schedule for executing the change in the Works. Prepare and submit a written itemized quotation of changes in the Contract Price or the Contract Times that would result from the proposed change in the Project by the due date stipulated in the proposal request.

D. Documentation of Change in Contract Price and Contract Times:

1. Maintain detailed records of work done on a time and material or force account basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Works.

2. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation by ENGINEER.

3. On request, provide additional data to support computations including:

    1. Quantities of products, labor, and equipment.

    2. Taxes, insurance, and bonds.

    3. Overhead and profit.

    4. Justification for any change in the Contract Times.

    5. Credit for deletions from the Contract, similarly documented.

4. Support each claim for additional costs, and for work done on a time and material or force account basis, with additional information including:

    1. Origin and date of claim.

    2. Dates and times work was performed, and by whom.

    3. Time records and wage rates paid.

    4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

E. CONTRACTOR may propose a change by submitting a request for change to ENGINEER, describing the proposed change and its full effect on the Works, with a statement describing the reason for the change, and the effect on the Contract Price and Contract Times with full documentation (including itemization of costs for labor, material, taxes, subcontracts, bonds, insurance, and overhead and profit) and a statement describing the effect on the Works by Other Contractors.

F. Work Change Directive: ENGINEER may issue a document, signed by TRUST, instructing CONTRACTOR to proceed with a change in the Works, for subsequent inclusion in a Change Order. The document will describe changes in the Works, and will designate method of determining any change in the Contract Price or the Contract Times. Promptly execute the change in the Works.

G. Lump Sum Price Change Order: Based on proposal request and CONTRACTOR's fixed lump sum price quotation or CONTRACTOR's request for a Change Order as approved by ENGINEER.

H. Unit Price Change Order: Based on proposal request and CONTRACTOR's fixed unit price quotation and estimated quantities or CONTRACTOR's request for a Change Order as approved by ENGINEER.

I. Time and Material or Force Account Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Contract Documents. ENGINEER will determine the change allowable in the Contract Price and the Contract Times as provided in the Contract Documents. Maintain detailed records of work done on a time and material or force account basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Works.

J. ENGINEER will issue Change Orders for signatures of parties as provided in the Contract Documents.

K. Promptly revise progress schedules to reflect any approved change in the Contract Times (or Milestones), revise sub-schedules to adjust times for other items of work affected by the change, and promptly resubmit to ENGINEER.

L. Promptly enter changes in the Project record documents.

M. Promptly revise Applications for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price.

END OF SECTION

SECTION 01300

ADMINISTRATIVE REQUIREMENTS

1.1 SECTION INCLUDES

A. Specification language.

B. Mobilization and startup.

C. Coordination.

D. Pre-construction meeting.

E. Progress meetings.

F. Pre-installation meetings.

G. Submittal procedures.

H. Progress schedules.

I. Monthly progress reports.

J. Construction quality control reports.

K. Proposed products list.

L. Product data.

M. Samples.

N. Construction photographs.

O. Project organization.

P. Submittals for progress meetings.

Q. Site layout.

R. Submittals Schedule.

S. Measurement and payment.

1.2 SPECIFICATION LANGUAGE

A. These Project Specifications are written in imperative mood and are in abbreviated or streamlined form and include incomplete sentences. This imperative language is directed to CONTRACTOR, unless specifically noted otherwise. Omission of words or phrases, such as "CONTRACTOR shall", "shall be", "a", "the", and "all" are intentional. Omitted words or phrases

shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings.

1.3 MOBILIZATION AND STARTUP

A. Do not mobilize to the Site without ENGINEER's prior written authorization. Ensure bonds and insurance as required by the Contract Documents are in full force.

B. Perform planning and scheduling activities as necessary for the performance of the Works.

C. Purchase materials and mobilize equipment, supplies, and incidentals to the Site.

D. Use the existing Site access roads to the designated work areas during mobilization. Complete improvements to roads as necessary for the performance of the Works.

E. Site temporary utilities and facilities in areas designated by ENGINEER. Obtain ENGINEER's approval prior to changing locations of temporary construction facilities. Do not use other areas without ENGINEER's prior approval. Provide additional land and access thereto not shown or described that may be required by CONTRACTOR for temporary construction facilities or storage of materials with no liability to TRUST or ENGINEER. Relocate construction equipment or other materials or equipment as required for the performance of the Works.

F. Do not commence work involving contact with potentially contaminated materials until decontamination facilities are operational and approved by ENGINEER.

1.4 COORDINATION

A. Coordinate scheduling, submittals, and work of the various Sections of the Project Specifications and other requirements of the Contract Documents to assure efficient and orderly sequence of installation of interdependent construction elements.

B. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such elements.

C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on the Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. Coordinate completion and cleanup of work of separate Sections in preparation for Substantial Completion.

E. After TRUST's occupancy of the Site or premises, coordinate access to the Site for correction of defective Works and Works not in accordance with the Contract Documents, to minimize disruption of TRUST's activities.

1.5 PRE-CONSTRUCTION MEETING

A. ENGINEER will schedule and administer a pre-construction meeting at the Site after the date of the Notice to Proceed and prior to start of construction at the Site.

B. ENGINEER will make arrangements for meeting, prepare agenda with copies for participants, and preside at meeting. Provide data required to ENGINEER and be prepared to discuss all items on the agenda.

C. Minimum Attendance Required: CONTRACTOR and CONTRACTOR's health and safety officer.

D. Agenda will include, but will not necessarily be limited to, the following:

1. Designation of responsible personnel.

2. Lines of authority and communication.

3. Health and safety.

4. Use of the Site for storage, vehicle parking, access routes, and other Site requirements.

5. TRUST's requirements.

6. Coordination with Other Contractors.

7. Temporary facilities and controls provided by CONTRACTOR.

8. Temporary utilities and services provided by TRUST.

9. Field offices.

10. Survey layout.

11. Security and housekeeping procedures.

12. Procedures for processing field decisions, submittals, substitutions, applications for payments, proposal requests, Field Orders, Work Change Directives, Change Orders, and closeout procedures.

13. Progress schedules.

14. Procedures for testing and inspection.

15. Procedures for maintaining record documents.

E. ENGINEER will record minutes and distribute copies to participants and those affected by decisions made. Identify errors in the minutes, if any, to ENGINEER in writing within 3 days of receipt.

1.6 PROGRESS MEETINGS

A. ENGINEER will schedule and administer progress meetings at the Site throughout the progress of the Works at minimum weekly intervals or more frequently as required.

B. ENGINEER will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings. Provide data required to ENGINEER and be prepared to discuss all items on the agenda.

C. Attendance Required: CONTRACTOR's health and safety officer, CONTRACTOR's superintendent, major Subcontractors and Suppliers, as appropriate to agenda topics for each meeting.

D. Agenda will include, but will not necessarily be limited to, the following:

1. Review of minutes of previous meetings.
2. Review of work progress since last meeting.
3. Field observations, problems, and decisions.
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-Site material fabrication/processing and delivery schedules.
7. Review of health and safety concerns and issues including air monitoring results.
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.
10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Change Orders.
15. Applications for Payment.
16. Other business relating to the Works.

E. ENGINEER will record minutes and distribute copies to participants and those affected by decisions made. All communication to Subcontractors, Suppliers, or others that CONTRACTOR is responsible for will be made through CONTRACTOR. Identify errors in the minutes, if any, to ENGINEER in writing within 3 days of receipt.

1.7 PRE-INSTALLATION MEETINGS

A. When required in individual Sections, convene a pre-installation meeting at the Site prior to commencing work of the Section.

B. Require attendance of parties directly affecting, or affected by, work of the specific Section.

C. Notify ENGINEER, in writing, 4 days in advance of meeting date.

D. Prepare agenda and preside at meeting:

1. Review conditions of installation, preparation, and installation procedures.

2. Review coordination with related work.

E. ENGINEER will record minutes and distribute copies to participants and those affected by decisions made.

F. Identify errors in the minutes, if any, to ENGINEER in writing within 3 days of receipt.

1.8 SUBMITTAL PROCEDURES

A. Submittal procedures shall conform to the requirements and procedures described in this Article.

B. Unless directed otherwise, transmit submittals to ENGINEER.

C. Transmit each submittal with ENGINEER accepted transmittal form and the correct number of copies.

D. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

E. Identify the Project, CONTRACTOR, Subcontractor, or Supplier; pertinent Drawing and detail number and Section number, as appropriate.

F. Apply CONTRACTOR's approval stamp prior to initial submission to ENGINEER, signed and dated, certifying that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents including but not limited to review and approval, verification of products required, field dimensions, adjacent construction work, and coordination of information with respect to CONTRACTOR's review and approval of that submittal. Unstamped or unsigned submittals will be returned by ENGINEER without action.

G. Except as specified otherwise, for each submittal for review by ENGINEER allow 15 days excluding delivery time to and from CONTRACTOR. Schedule submittals to expedite the Contract and in accordance with specified scheduling. Coordinate submission of related items.

H. Identify product or system limitations which may be detrimental to successful performance of the completed Works.

I. Provide space for ENGINEER review stamp and comments on submittals.

J. Make corrections to each submittal required by ENGINEER. Promptly revise and resubmit the required number of corrected copies of each submittal and submit new submittals required by such correction; identify changes made since previous submission and changes other than those requested by ENGINEER.

K. Promptly distribute copies of reviewed submittals to Subcontractors, Suppliers, and other concerned parties as appropriate. Instruct parties to promptly report any inability to comply with provisions.

L. Submittals not requested will not be recognized or processed. Submittals received directly from Subcontractors, Suppliers, vendors, or other Representatives or without CONTRACTOR stamp will be returned by ENGINEER without action.

M. Adjustments made on CONTRACTOR's drawings by ENGINEER are not intended to change the Contract Price. If adjustments affect the Contract Price, state such in writing, as specified elsewhere in the Contract, to ENGINEER for approval prior to proceeding with the Works.

N. It is the responsibility of CONTRACTOR to review submittals made by Suppliers and Subcontractors before transmitting them to ENGINEER to assure proper coordination of the Works and to determine that each submittal is in accordance with CONTRACTOR's desires and that there is sufficient information about materials and equipment for ENGINEER to determine compliance with the Drawings and Specifications. Incomplete or inadequate submittals will be returned for revision without review.

O. Unless specified otherwise submit 3 copies of submittals.

P. Requirements of this Article 1.8 shall apply to all required submittals.

1.9 PROGRESS SCHEDULES

A. Submit initial detailed progress schedule in duplicate within 7 days after the date of the Notice to Proceed and prior to commencing work at the Site. After ENGINEER's review, resubmit required revised data within 3 days. Submit updated progress schedules at each progress meeting, identifying changes since previous version and estimated percentage of completion for each item of the Works. If a schedule remains unchanged from one period to the next, submit a written notice to that effect.

B. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities, and include the Contract Times (or Milestones) identified in Section 01100. Show coordination of interrelated work activities and items. Indicate the early and late start, early and late finish, float dates, and duration.

C. If during performance of the Works, CONTRACTOR believes it necessary or advantageous to change sequence of activities shown on CONTRACTOR's progress schedule, submit proposed revisions to ENGINEER for approval prior to changing the sequence of work. No change shall be made in the order in which work activities are being performed until ENGINEER's written approval for the revised schedule has been obtained. The schedule will be acceptable to ENGINEER as providing an orderly progression of the Works to completion within any specified dates identified in Section 01100, but such acceptance will neither impose on ENGINEER

responsibility for the sequencing, scheduling, or progress of the Works nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefore.

1.10 MONTHLY PROGRESS REPORTS

A. Submit monthly progress report in a form acceptable to ENGINEER indicating work accomplished, problems encountered, problems resolved, and work scheduled for the next month.

B. The following documentation shall be part of the monthly progress report:

1. Tabulated budget status listing the Contract tasks identified in the progress schedule, and consisting of the following column headings:

1. Original Budget: Original estimated cost, including direct proportional amount of CONTRACTOR's overhead and profit, to accomplish the tasks. Total cost to complete the tasks shall equal the Contract Price.

2. Approved Changes: Changes approved by Change Order to the original budget.

3. Current Budget: Sum of original budget and approved changes.

4. Percent Complete: Estimated fraction of the work that has been completed.

5. Achieved Value: Dollar value of the work that has been completed i.e., current budget multiplied by percent complete.

6. Amount Spent: Dollar amount that has been spent on the task.

7. Achieved/Spent Ratio: Comparison of achieved value to amount spent.

1.11 CONSTRUCTION QUALITY CONTROL REPORTS

A. Record daily Construction Quality Control activities in CONTRACTOR's Site log book.

B. Each work day submit a Construction Quality Control report for the previous work day.

1.12 PROPOSED PRODUCTS LIST

A. Within 15 days after the date of the Notice to Proceed and prior to products arrival on the Site, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards or description, give name of manufacturer, trade name, model or catalog designation, and reference standards.

C. For products requiring special handling procedures, submit a Material Safety Data Sheet prior to product's arrival on the Site.

1.13 PRODUCT DATA

A. Submit the number of copies which CONTRACTOR requires, plus 2 copies which will be retained by ENGINEER.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to the Project.

C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. After review, distribute in accordance with Article 1.8 and provide copies for record documents as described in Section 01700.

1.14 SAMPLES

A. The submittal of Samples shall conform to the requirements and procedures described in this Article.

B. When specified in individual Sections, submit Samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.

C. Samples which are related to the same unit of Works or Specification Section shall be submitted at the same time. If related Shop Drawings and Samples are submitted at different times, they cannot be reviewed until both are furnished to ENGINEER.

D. CONTRACTOR shall review, approve, and submit all Samples promptly. Samples shall be identified with correct reference to individual Section, page, article and paragraph number, and Drawing number when applicable.

E. CONTRACTOR shall submit at least 3 Samples of each item required for ENGINEER's approval. Submission of Samples shall conform to all applicable provisions under Article 1.8 Submittal Procedures.

F. ENGINEER will review and take action on Samples with reasonable promptness so as to cause no delay, but only for conformance with the design concept of the Works and with the information given in the Contract Documents.

G. CONTRACTOR shall make all corrections required and shall resubmit the required number of new Samples until approved.

H. ENGINEER's approval of Samples shall not relieve CONTRACTOR of responsibility for any deviation from the requirements of the Contract Documents. ENGINEER's approval shall not relieve CONTRACTOR from responsibility for errors or omissions in the Samples.

I. No portion of the Works requiring a Sample submission shall be commenced until the submission has been approved by ENGINEER. All such portions of the Works shall be in accordance with approved Samples.

1.15 CONSTRUCTION PHOTOGRAPHS

A. Twice monthly submit photographs within 3 days after exposure.

B. Photographs: 1 print; color, glossy; can be submitted in electronic format.

C. Take 2 Site photographs from differing directions indicating the relative progress of the Works.

D. ENGINEER will advise CONTRACTOR in writing, describing Project locations and subjects to be photographed, which will not be limited to work performed under the Contract.

E. Each photograph shall contain at least 1 person or other easily identifiable object properly located to effectively illustrate dimensional scale of work being photographed.

F. Camera equipment, film, and development used shall be type best suited to produce glossy enlargement prints that are sharp and show details clearly.

G. Identify photographs with date, time, orientation, Project identification, and description provided by ENGINEER.

H. Repeat information contained on back of each photographic print on sleeve of negatives.

I. Permission for CONTRACTOR to use progress photographs will be subject to approval of ENGINEER.

1.16 PROJECT ORGANIZATION

A. Within 7 days after the date of the Notice to Proceed and prior to mobilization to the Site submit to ENGINEER a Project organization chart identifying major positions and names of persons assigned to these positions, including off-Site Project manager, superintendent, certified industrial hygienist, health and safety officer, testing labs, and Subcontractors.

1.17 SUBMITTALS FOR PROGRESS MEETINGS

A. At least 24 hours prior to scheduled progress meetings submit the following:

1. Updated progress schedule detailing all activities. Include review of progress with respect to previously established dates for starting and stopping the various stages of the Works, major problems and action taken, injury reports, equipment breakdown, and material removal.

2. Copies of air sampling and analytical results conducted by CONTRACTOR.

3. Copies of transport manifests, trip tickets, and disposal receipts for waste materials removed from the work area.

4. Weekly copies of the Site entry and work area logbooks with information on worker and visitor access.

5. Weekly logs documenting filter changes on HEPA vacuums, and other engineering controls.

6. Weekly results of collected air sampling and analytical data, including OSHA compliance air monitoring results.

7. Any other information required by ENGINEER or relevant to the agenda for the upcoming progress meeting.

1.18 SITE LAYOUT

A. Within 7 days after the date of the Notice to Proceed and prior to mobilization to the Site, submit the Site layout drawings, showing existing conditions, facilities, and proposed construction facilities, and temporary controls to be provided by CONTRACTOR including but not limited to the following:

1. Existing property lines, structures, roads, utilities, and other existing Site feature or facility.

2. Temporary access roads and utilities to be constructed.

3. Field offices and sheds.

4. Equipment and personnel decontamination areas.

5. The means of ingress and egress and temporary traffic control facilities.

6. Proposed location of Site access.

7. Equipment and material staging areas.

8. Soil stockpile areas. Demolition debris stockpile areas.

9. Exclusion Zones, Contaminant Reduction Zones, and other zones specified in CONTRACTOR's Site-specific Health and Safety Plan.

1.19 SUBMITTALS SCHEDULE

A. Submit a submittals schedule within 7 days after the date of the Notice to Proceed.

B. The submittals schedule shall be in tabular form listing each required submittal by Section and the time for submitting, reviewing, and processing each submittal.

C. The submittals schedule will be reviewed by ENGINEER and ENGINEER will respond in writing listing deficiencies. Do not list submittals not called for in the Contract Documents. The schedule shall include all items for which CONTRACTOR proposes to use substitute or "or-equal" products. Correct deficiencies and resubmit the Submittals schedule prior to beginning any work.

1.20 MEASUREMENT AND PAYMENT

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

B. Bonds:

1. Schedule of Prices Item No. 01300/1.

2. Payment Basis: Lump sum price. Includes furnishing and maintaining bonds required by the Contract Documents.

C. Insurance:

1. Schedule of Prices Item Nos. 01300/2 i), 01300/2 ii), 01300/2 iii), 01300/2 iv), and 01300/2 v).

2. Payment Basis: Lump sum price. Includes furnishing and maintaining insurance required by the Contract Documents including Pollution Liability insurance for Item No. 01300/2 i), Asbestos Liability insurance for Item No. 01300/2 ii), TRUST's Protective Liability insurance for Item No. 01300/2 iii), Builders' Risk (All-Risks) insurance for Item No. 01300/2 iv), and all other insurance for Item No. 01300/2 v).

D. Mobilization and Startup:

1. Schedule of Prices Item No. 01300/3.

2. Payment Basis: Lump sum price. Includes resource and material procurement activities; procure permits; meetings to coordinate key interface points and to establish communication channels between TRUST, ENGINEER, and CONTRACTOR.

END OF SECTION

SECTION 01351

HEALTH AND SAFETY

1.1 SECTION INCLUDES

A. References.

B. General requirements.

C. Basis of program.

D. Site characterization.

E. Submittals.

F. Health and Safety Officer.

G. Personnel health, safety, and hygiene.

H. Air monitoring.

I. Contingency and Emergency Response Plans.

J. Site control.

K. Measurement and payment.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. United States Federal Government - Code of Federal Regulations (CFR):

1. 29 CFR 1910.120 - Hazardous Waste Operations and Emergency Response.

2. 29 CFR 1910.134 - Respiratory Protection.

3. 29 CFR 1910.146 - Permit-required Confined Spaces.

4. 29 CFR 1910.1200 - Hazard Communication.

5. 29 CFR 1926.65 - Hazardous Waste Operations and Emergency Response.

1.3 GENERAL REQUIREMENTS

A. Develop a written Site-specific Health and Safety Plan which complies with 29 CFR 1910.120 and 29 CFR 1926.65 prior to commencing any on-Site work and continue to implement, maintain, and enforce the plan until final demobilization from the Site. The development, implementation, and

maintenance of the Site-specific Health and Safety Plan is CONTRACTOR's sole responsibility. CONTRACTOR's Site-specific Health and Safety Plan, as a minimum, shall address the specifications contained herein.

B. The health and safety guidelines contained herein are intended to provide for a safe and minimal risk working environment for on-Site personnel and to minimize the impact of activities involving contact with any Hazardous Substance, Hazardous Waste, Pollutant, Contaminant, or Solid Waste on the general public and the surrounding environment.

C. Should CONTRACTOR seek relief from or substitution for any portion or provision of the minimum health and safety guidelines specified herein or CONTRACTOR's Site-specific Health and Safety Plan, such relief or substitution shall be requested of ENGINEER in writing, and if accepted by ENGINEER, will be authorized in writing.

D. Responsibility: Be responsible for the safety of persons and property on the Site and for the protection of persons off the Site and the environment to the extent that they may be affected by the conduct of the Works. Comply with and enforce compliance by employees of CONTRACTOR and Representatives with safety requirements of the Contract Documents, Laws and Regulations, and CONTRACTOR's Site-specific Health and Safety Plan. CONTRACTOR acknowledges that safety and environment protection obligations are of paramount importance regarding all of the work to be performed under the Contract Documents.

E. Hazard Communication Requirements:

1. Comply with the requirements of OSHA's "Hazard Communication" rule, 29 CFR 1910.1200. Obtaining information on any hazardous chemical or harmful physical agent to which personnel of CONTRACTOR and Representatives, and visitors have potential exposure while on the Site.

2. CONTRACTOR shall provide ENGINEER with Material Safety Data Sheet (MSDS) documentation on any "hazardous" chemicals that CONTRACTOR or Representatives plan to bring onto the Site. In addition, CONTRACTOR shall be responsible for meeting container warning label requirements of OSHA rule.

F. Work Stoppage: Give precedence to the safety and health of the public and on-Site personnel and the protection of the environment over cost and schedule considerations for all Project work. The Health and Safety Officer shall be responsible for decisions regarding when work will be stopped or started for health or safety considerations and shall have the authority, in the Health and Safety Officer's discretion, to stop or start the work for health or safety considerations. ENGINEER will have the right to stop work for health and safety considerations.

G. Unforeseen Hazards: Should any unforeseen or Site-peculiar safety-related factor, hazard, or condition become evident during performance of the Works at the Site, bring such to the attention of ENGINEER verbally and in writing as quickly as possible, for resolution. In the interim, take prudent action to establish and maintain safe working conditions and to safeguard employees of CONTRACTOR and Representatives, the public, TRUST, ENGINEER, and the environment.

1.4 BASIS OF PROGRAM

A. OSHA standards and regulations contained in 29 CFR 1910 and 1926 provide the basis for the health and safety program. The program also reflects the position of USEPA and NIOSH regarding procedures recommended or required to ensure safe operations at sites containing hazardous or toxic materials.

1.5 SITE CHARACTERIZATION

A. Work at the Site will involve contact with solid waste, subsurface soils, and potentially groundwater/leachate from the landfill.

1.6 SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. CONTRACTOR's Site-Specific Health and Safety Plan:

1. Within 7 days after the date of the Notice to Proceed and prior to mobilization to the Site, submit a Site-specific Health and Safety Plan which complies with 29 CFR 1910.120 and 29 CFR 1926.65. As a minimum, the Site-specific Health and Safety Plan shall include the following:

1. A safety and health risk or hazard analysis for each Site task and operation.

2. Personnel training assignments in accordance with 29 CFR 1910.120 (e) and 29 CFR 1926.65 (e).

3. Personal protective equipment to be used by personnel for each Site task and operation being conducted in accordance with 29 CFR 1910.120 (g)(5) and 29 CFR 1926.65 (g)(5).

4. Medical surveillance requirements in accordance with 29 CFR 1910.120 (f) and 29 CFR 1926.65 (f).

5. Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment to be used.

6. Site control measures in accordance with 29 CFR 1910.120 (d) and 29 CFR 1926.65 (d).

7. Decontamination procedures in accordance with 29 CFR 1910.120 (k) and 29 CFR 1926.65 (k).

8. An emergency response plan meeting the requirements of 29 CFR 1910.120 (l) and 29 CFR 1926.65 (l) for safe and effective responses to emergencies, including necessary personal protective equipment and other equipment.

9. A written respiratory protection program for Project activities.

10. Procedures dealing with heat and/or cold stress.

11. Confined space entry procedures.

12. A spill containment program meeting the requirements of 29 CFR 1910.120 (j) and 29 CFR 1926.65 (j) if drummed waste material is generated, excavated, stored, or managed at the Site.

2. ENGINEER will review CONTRACTOR's Site-specific Health and Safety Plan and provide comments to CONTRACTOR within 10 days after receipt of the plan. Revise the plan as appropriate and resubmit the plan to ENGINEER within 7 days after receipt of comments from ENGINEER.

C. Proof of OSHA Training: Within 7 days after the date of the Notice to Proceed and prior to mobilization to the Site, submit a list of all personnel that will be employed at the Site. For each of the listed personnel, provide proof of training as required under OSHA 29 CFR 1910.120 and 29 CFR 1926.65. Submit proof of training for any additional personnel, as they are sent to the Site.

D. Medical Surveillance:

1. Within 7 days after the date of the Notice to Proceed and prior to mobilization to the Site, submit certification of medical surveillance for all Site personnel.

2. Submit additional certification of medical surveillance as personnel are sent to the Site.

E. Respirator Fit Test: Within 7 days after the date of the Notice to Proceed and prior to mobilization to the Site, submit proof of respirator fit testing for on-Site personnel.

F. Air Monitoring Reporting: Submit daily on a separate CONTRACTOR designated form air monitoring results.

1.7 HEALTH AND SAFETY OFFICER

A. Employ and assign to the Works a competent and authorized representative herein referred to as "Health and Safety Officer". Health and Safety Officer Qualifications:

1. Have a minimum of 2 years Site-related working experience specific to the activities associated with excavation activities in landfill/solid waste projects.

2. Have a basic working knowledge of state and federal occupational safety and health regulations.

3. Have formal education and/or training in occupational safety and health.

B. Health and Safety Officer Responsibilities:

1. Obligated to stop or start the work when it is necessary or advisable for reasons of health or safety.

2. Completing Health and Safety Training Sessions and ensuring that personnel not successfully completing the required training are not permitted to enter the Site to perform work in the Exclusion Zone or the Contaminant Reduction Zone.

3. Implementing and daily enforcing and monitoring the Site-specific Health and Safety Plan.

4. Be on the Site during the execution of work at the Site.

1.8 PERSONNEL HEALTH, SAFETY, AND HYGIENE

A. Medical Surveillance: Conduct medical surveillance of personnel as required by 29 CFR 1910.120, 29 CFR 1926.65, and 29 CFR 1910.134.

B. Training: Furnish personnel assigned to or entering the Site who have successfully completed training required by the applicable OSHA Standards in 29 CFR 1910 and 29 CFR 1926 and specifically with 29 CFR 1910.120 and 1926.65.

C. Levels of Protection: Establish actual levels of protection for each work area based on planned activity and location of activity. The anticipated levels of personal protection based on work activity are as follows:

	Work Activity	*Anticipated Level of Personal Protection*
1.	Excavation and regrading activities	Level D/Level C.
2.	Construction of earthen soil cover and ancillary features	Level D/Level C.
3.	Construction of passive ventilation trench	Level D/Level C.
4.	Installation of soil gas probes	Level D/Level C.

D. Personal Protective Equipment:

1. Furnish on-Site CONTRACTOR personnel with appropriate PPE. Clean and maintain safety equipment and protective clothing. As a minimum, each worker on Site shall wear a hard hat, safety glasses with side shields, safety boots with steel toes and shank, full-length pants, and long sleeve shirt.

2. Develop protective equipment usage procedures and enforce strict compliance with such procedures by on-Site personnel; include the following procedures as a minimum:

    1. Do not permit prescription eyeglasses to be worn that are not safety glasses. Do not permit contact lenses on the Site within the Exclusion Zone or the Contaminant Reduction Zone.

    2. Change respirator cartridges/filters daily during periods of respirator usage or prior to breakthrough, whichever occurs first.

    3. Do not permit footwear to be worn that is not steel-toed safety shoes or boots. Cover footwear by rubber overshoes when entering or working in the Exclusion Zone or the Contaminant Reduction Zone.

4. Dispose of or decontaminate PPE worn on the Site at the end of the work day.

5. Decontaminate reusable PPE before reissuing.

6. Do not permit on-Site personnel who have not passed a respirator fit test to enter the Exclusion Zone or the Contaminant Reduction Zone. Do not permit personnel to have facial hair that interferes with a proper fit of the respirator.

E. Respiratory Protection:

1. Furnish on-Site personnel with extensive training in the usage and limitations of, and qualitative fit testing for, air purifying and supplied-air respirators in accordance with 29 CFR 1910.134 for any confined space entry, or any work requiring Level C or higher protection.

2. Develop, implement, and maintain a written respiratory program in accordance with 29 CFR 1910.134.

3. Monitor, evaluate, and provide respiratory protection for on-Site personnel.

4. Levels of protection as listed in Paragraph 1.8 C have been chosen to be consistent with the Site-specific potential airborne hazards associated with the major contaminants identified at the Site. The selection of appropriate protection is based upon the potential presence of compounds with the lowest recommended threshold limit value.

5. Be responsible for appropriate respiratory protection during work activities. Do not allow persons to enter the Exclusion Zone or the Contaminant Reduction Zone without appropriate respiratory protection.

6. Be responsible for assessing the ability for on-Site personnel to wear respiratory protection. Cardiopulmonary system examination and pulmonary function testing are minimum requirements for personnel wearing respiratory protection.

7. Do not permit on-Site personnel unable to pass a respirator fit test to wear respiratory protection and to enter the Exclusion Zone or the Contaminant Reduction Zone.

F. Heat Stress/Cold Stress: Implement a heat stress and/or cold stress monitoring program as applicable and include in the Site-specific Health and Safety Plan.

G. Personnel Hygiene and Personnel Decontamination Procedures:

1. Provide, as a minimum, the following:

1. Suitable containers for storage and disposal of used disposable PPE.

2. Potable water and a suitable sanitation facility.

H. Emergency and First-Aid Equipment:

1. Locate and maintain emergency and first-aid equipment in appropriate location on the Site, including:

1. First-aid kit to accommodate the numbers of on-Site personnel.

2. Portable emergency eye wash.

3. Two 20-pound ABC type dry chemical fire extinguishers.

4. Fire blankets and towels.

5. Stretcher.

6. One hand-held emergency siren.

2. As a minimum, provide 1 certified first-aid technician on the Site at all times that on-Site work activities are in progress. This technician may perform other duties but shall be immediately available to render first aid when needed.

I. Site Communications:

1. Post emergency numbers near the Site telephones.

2. Ensure that personnel work under the use of a "buddy" system and develop a hand signal system appropriate for the Site activities.

3. Provide an employee alarm system to notify employees of on-Site emergency situations or to stop work activities if necessary.

4. Furnish selected personnel with 2-way radios.

J. Safety Meetings: Conduct mandatory daily safety meetings for on-Site personnel, and additionally as required by special or work-related conditions; include refresher training for existing equipment and protocols, review ongoing safety issues and protocols, and examine new Site conditions as they are encountered. Hold additional safety meetings on an as-needed basis.

1.9 AIR MONITORING

A. Develop air monitoring program meeting the requirements of 29 CFR 1910.120 (h) and 29 CFR 1926.65 (h).

B. During the progress of work activities, monitor air quality in and around the Exclusion Zone. Conduct air monitoring on a regular periodic basis, and additionally as required by special or work-related conditions. Report any departures from general background to ENGINEER who will, in conjunction with the Health and Safety Officer, determine when operations should be shut down and restarted.

C. Operate air monitoring equipment with personnel trained in the use of the specific equipment provided and under the control of the Health and Safety Officer. Monitoring equipment used within the potentially contaminated work areas with combustible gases shall be intrinsically safe.

D. Conduct air monitoring on a routine basis around active work locations. Perform monitoring as a minimum on an hourly basis and additionally as dictated by the Site activities.

1.10 CONTINGENCY AND EMERGENCY RESPONSE PLANS

A. General: Comply with 29 CFR 1910.120 (l) and 20 CFR 1926.65 (l).

B. On-Site Contingency and Emergency Response Plan: Address the standard operating procedures to be implemented during emergency situations.

C. Off-Site Contingency and Emergency Response Plan:

1. Prior to commencing work involving the handling of Hazardous Substance, Hazardous Waste, Pollutant, Contaminant, or Solid Waste, develop an off-Site Contingency and Emergency Response Plan. This plan is intended to provide immediate response to a serious Site occurrence such as explosion, fire, or migration of significant quantities of toxic or hazardous material from the Site which could affect or endanger the public or adjacent public or private areas.

2. Attend a coordination meeting to be held with appropriate authorities including City, Fire, Hospital, State and City Police, State Department of Transportation, County Health Department, and Community Emergency Coordinator; meeting will identify the off-Site Emergency Response Coordinator through whom all information and coordination will occur in the event of an incident.

1.11 SITE CONTROL

A. Comply with 29 CFR 1910.120 (d) and 20 CFR 1926.65 (d).

B. Provide in the Site-specific Health and Safety Plan a figure or map which presents the delineation of the work zones for Project activities.

C. Provide in the Site-specific Health and Safety Plan a discussion on Site security issues.

D. Provide in the Site-specific Health and Safety Plan a detailed discussion on decontamination procedures for both equipment and personnel, including collection and disposal of wash waters, sediments, and spent PPE.

E. Confined Space Entry Program: Comply with 29 CFR 1919.146; include in the Site-specific Health and Safety Plan.

1.12 MEASUREMENT AND PAYMENT

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

B. Development, Implementation, and Maintenance of the Site-specific Health and Safety Plan:

1. Schedule of Prices Item No. 01351/1.

2. Payment Basis: Lump sum price. Includes development, implementation, and maintenance of the Site-specific Health and Safety Plan; provision of all required training;

designation and maintenance of work areas; air monitoring for volatile organics, explosive gases, and respirable dust; services of the Health and Safety Officer including salary, wages, taxes, and benefits; maintaining, cleaning, and stocking the Personnel Hygiene/Decontamination Facility, the Emergency First-aid Facility, toilet facilities; and provision of the Site security.

END OF SECTION

SECTION 01400

QUALITY REQUIREMENTS

1.1 SECTION INCLUDES

A. Quality control.

B. Tolerances.

C. References.

D. Inspecting and testing services.

E. Measurement and payment.

1.2 QUALITY CONTROL

A. Monitor quality control over Suppliers, products, services, the Site conditions, and workmanship, to produce Works of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

D. Comply with specified standards as minimum quality for the Works except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality. Use persons licensed to perform the Works where required by these Specifications or Laws and Regulations.

F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

G. Materials furnished and finished or intermediate stages of the Works shall be sampled, tested, and inspected as specified in individual Sections and as required by reference standards.

1.3 TOLERANCES

A. Monitor tolerance control of installed products to produce acceptable Works. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable Laws and Regulations.

B. Conform to reference standard by date of issue current as of bid closing date, except where a specific date is established by Laws or Regulations or by an individual Section.

C. Specific provisions of Laws or Regulations may be referenced in the Project Specifications to assist CONTRACTOR and identify options selected by ENGINEER. Such references do not relieve CONTRACTOR from compliance with other applicable provisions of Laws or Regulations not specifically referenced.

D. No inference or provision of any reference document including but not limited to any standard specification, manual, or code shall be effective to change the relationships, duties, and responsibilities of TRUST, CONTRACTOR, or ENGINEER from those set forth in the Contract Documents, nor shall it be effective to assign to TRUST or ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Works or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract.

E. Publications referred to in these Specifications form part of the Specifications to the extent specified in individual Sections.

F. In case of conflict or discrepancy between a reference standard and the Project Specifications or with another reference standard, the more stringent requirements shall apply.

G. Should specified reference standards conflict with the Contract Documents, request clarification from ENGINEER before proceeding.

1.5 INSPECTING AND TESTING SERVICES

A. TRUST will employ and pay for services of an independent inspecting company and testing laboratory to perform inspecting and testing services as specified in individual Sections.

B. Employment of inspecting company and testing laboratory and services performed by such inspecting company and testing laboratory in no way relieves CONTRACTOR of obligation to perform the Works in accordance with requirements of the Contract Documents.

C. Inspecting Company and Testing Laboratory Responsibilities:

1. Test samples of mixes and materials submitted by CONTRACTOR.

2. Provide qualified personnel at the Site. Cooperate with ENGINEER and CONTRACTOR in performance of services.

3. Perform specified inspecting, sampling, and testing of products and methods of construction in accordance with specified standards.

4. Ascertain compliance of materials and mixes with requirements of the Contract Documents.

5. Promptly notify ENGINEER and CONTRACTOR of observed irregularities, deficiencies, or non-conformance of the Works or products.

6. Perform additional inspection and tests required by ENGINEER.

7. Attend pre-construction meetings and progress meetings, as required.

D. Inspecting Company and Testing Laboratory Reports:

1. After each inspection and test promptly submit 2 copies of reports to ENGINEER and to CONTRACTOR. Submit draft on-Site inspection report prior to leaving the Site.

2. As a minimum, reports shall include:

1. Date issued.

2. Project title and number.

3. Name and address of inspecting and testing laboratory.

4. Name of inspector.

5. Date and time of sampling or inspection.

6. Identification of product and related specification Section.

7. Location in the Project.

8. Record of temperature and weather.

9. Type of inspection or test.

10. Date of test.

11. Results of tests and observations.

12. Conformance with the Contract Documents.

3. When requested by ENGINEER, provide interpretation of test results.

E. Limits on Inspecting Company and Testing Laboratory Authority:

1. Inspecting company and testing laboratory may not release, revoke, alter, or enlarge on requirements of the Contract Documents.

2. Inspecting company and testing laboratory may not approve or accept any portion of the Works.

3. Inspecting company and testing laboratory may not assume or perform any duties of CONTRACTOR.

4. Inspecting company and testing laboratory has no authority to stop the Works.

F. CONTRACTOR Responsibilities:

1. Deliver to inspecting company and testing laboratory at designated location, adequate samples of materials proposed to be used which require testing.

2. Cooperate with personnel of independent inspecting company and testing laboratory, and provide safe access to the Works and to manufacturer's operations.

3. Provide incidental labor and facilities:

1. To provide access to the Works to be tested.

2. To obtain and handle samples at the Site or at source of products to be tested.

3. To facilitate tests and inspections.

4. For inspecting company and testing laboratory's exclusive use for storage and curing of test samples.

5. Forms for preparing concrete test beams and cylinders.

4. Notify ENGINEER and inspecting company and testing laboratory 24 hours prior to expected time for operations requiring inspecting and testing services to allow for assignment of personnel and scheduling of tests.

5. Furnish copies of product test reports.

6. Promptly notify ENGINEER of all observed irregularities or non-conformance of the Works.

7. Retesting required because of CONTRACTOR negligence or non-conformance to specified requirements shall be performed by the same inspecting and testing laboratory on instructions by ENGINEER at CONTRACTOR's expense and at no additional cost to TRUST.

8. If defects or deficiencies are revealed during testing or inspecting, correct such defects and deficiencies and retest affected portions of the Works.

1.6 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

1.1 SECTION INCLUDES

A. Temporary Utilities: Water service, portable radios.

B. Construction Facilities: ENGINEER's field office, CONTRACTOR's field office and sheds, Equipment Decontamination Facility, Personnel Hygiene/Decontamination Facility, Emergency First-aid Facility, sanitary facilities, drum staging pad, storage/stockpiling facilities, wastewater storage drums.

C. Vehicular Access and Parking: Access roads, parking, traffic regulation.

D. Temporary Barriers and Enclosures: Barriers, fencing, security.

E. Temporary Controls: Water control, dewatering, erosion and sediment control, pest control, rodent control, noise control, dust and particulate control, pollution control, equipment decontamination.

F. Project identification.

G. Removal of temporary facilities and controls.

H. Measurement and payment.

1.2 TEMPORARY UTILITIES

A. Water Service:

1. Provide, maintain, and pay for suitable quality water service required. Connect to existing water source for construction operations. Existing potable water source will be available on the south side of County Road 10, west of John Weaver Parkway, near entrance gate to the Site.

2. Exercise measures to conserve water. Provide separate metering for cost of water used.

3. Extend branch piping with outlets located so water is available by hoses with threaded connections.

4. Connections to Source: Include backflow protection valves which are temperature and pressure rated for operation at the temperatures and pressures encountered; after completion of use, remove connections and fittings without damage or alteration to existing water piping and equipment.

5. Provide an operating flow control valve in-line near work locations to reduce unnecessary wastage of potable water.

B. Portable Radios:

1. Provide and maintain for ENGINEER's exclusive use, two 2-way portable radios for Site communications capable of clearly transmitting and receiving communications over a 1-mile radius at time of mobilization to the Site.

2. Radio Frequencies: Same as those set for the radios used by CONTRACTOR.

3. Equip at least the following key CONTRACTOR personnel with 2-way portable radios:

1. Superintendent.

2. Health and Safety Officer.

3. Security personnel.

4. Each crew foreman.

1.3 CONSTRUCTION FACILITIES

A. ENGINEER's Field Office:

1. Provide structurally sound, completely weathertight and insulated office trailer acceptable to ENGINEER, which is specifically designed for this type of use and conforms to the requirements specified; minimum floor area 400 sq ft, minimum 10 feet wide, complete with minimum four 50 percent opening windows with minimum total area of 10 percent floor area per room with operable sash and screen, 2 lockable doors with new locks and 2 keys and screens, heating and cooling equipment to maintain ambient temperature of 68 to 72 degrees F, new interior finish, resilient floor covering in first class condition, and exterior finish, all acceptable to ENGINEER. Provide 4 feet minimum width concrete or boardwalk landings and sidewalks for complete access to field office.

2. Provide office complete within 2 weeks after date of Notice to Proceed.

3. Minimum Furnishings: 5-drawer desk, shelf, 3-drawer lockable filing cabinet, 1 coat rack, 1 swivel armchair, 3 side chairs, 2 waste baskets, 2 tack boards, 2-door storage cabinet, 1 bookcase with shelving minimum 48 inches by 48 inches, drawing rack to hold 8 racks of drawings mounted on wheels with lateral file compartments on top, drafting table with built-in drawer, drafting stool and light, and minimum two 20-pound ABC type dry chemical fire extinguishers, one 10-person first-aid kit, outdoor thermometer, wall-mounted electric clock, 6 protective helmets, one 6-foot plug mold strip with outlets at 12-inch spacings, prewired with 6-foot extension cords.

4. Locate office in location shown on the Drawings or location as directed by ENGINEER.

5. Remove office upon final acceptance or when directed by ENGINEER. ENGINEER's field office and furnishings will become property of CONTRACTOR upon completion of the Project.

6. Maintain office and services continuously. Provide soap, paper towels, cleansers, janitorial service and implements.

7. Repair immediately any damage, leaks, or defective service.

8. Exchange walk-off mats weekly at all entrances.

B. CONTRACTOR's Field Office and Sheds:

1. Provide CONTRACTOR's field office with the minimum facilities specified. Provide all required storage and work sheds.

2. Field Office and Furnishings:

1. As required by CONTRACTOR but with sufficient room for Project meetings.

2. Six protective helmets for visitors' use.

3. Exterior identifying sign.

4. Other furnishings at CONTRACTOR's option.

3. Remove office and sheds upon completion unless otherwise approved by ENGINEER.

C. Equipment Decontamination Facility:

1. Prior to commencing work involving equipment contact with potentially contaminated materials, construct an equipment decontamination pad to accommodate the largest piece of on-Site potentially contaminated equipment.

2. Submit equipment decontamination pad design to ENGINEER for review prior to commencing construction.

3. Provide, operate, and maintain suitable portable, high-pressure, low-volume decontamination wash unit(s) equipped with self-contained water storage tank and pressurizing system and capable of heating and maintaining wash waters to 180 degrees F and providing a nozzle pressure of 150 psi.

4. Provide, operate, and maintain necessary equipment, pumps, and piping required to collect and contain equipment decontamination wastewater and sediment and transfer same to approved storage facilities.

D. Personnel Hygiene/Decontamination Facility:

1. Provide, operate, and maintain a Personnel Hygiene/Decontamination Facility which complies with the requirements of 29 CFR 1910.141 and contains, as a minimum, the following:

1. Shower facilities with at least 1 shower for every 5 on-Site CONTRACTOR personnel.

2. Locker room with 1 locker for each on-Site CONTRACTOR personnel plus 3 additional lockers for use by ENGINEER and regulatory agencies.

3. A room where personal safety equipment and protective clothing can be stored.

4. Containers for storage of spent disposable personnel safety and protective equipment.

2. Provide a boot wash, glove wash, refuse containers, and other items required for initial personnel decontamination at the decontamination corridor established at each work area for initial personnel decontamination prior to entering the Personnel Hygiene/Decontamination Facility.

E. Emergency First-Aid Facility:

1. Provide, operate, and maintain an Emergency First-aid Facility which complies with the requirements of 29 CFR 1910.151 and contains, as a minimum, the following equipment and supplies:

1. Stretcher.

2. One set of crutches.

3. Two fire extinguishers meeting the requirements of 29 CFR 1910.157.

4. Two self-contained breathing apparatus units including full-face masks.

5. One counter and sink with running potable water connected to sanitary wastewater holding tanks.

6. One cot.

7. Blankets and towels as required.

8. First-aid kit containing medications appropriate for the initial treatment of burns, abrasions, fractures, and ingestion or dermal contact with on-Site hazardous waste.

9. Two hand-held emergency sirens.

10. Portable emergency eye wash and shower.

2. Locate the Emergency First-aid Facility within the Personnel Hygiene/Decontamination Facility or separately.

F. Sanitary Facilities:

1. Provide and maintain required temporary sanitary facilities and enclosures in accordance with OSHA.

2. Remove and dispose of sanitary wastes off the Site on a periodic basis as required and in accordance with applicable Laws and Regulations.

3. In lieu of portable sanitary toilets, provide toilets housed within the Personnel Hygiene/Decontamination Facility which are connected to separate collection tanks or to the existing Site sanitary sewer system.

G. Drums:

1. Storage of Liquid Waste: DOT-approved 55-gallon steel drums, closable lids, complete with labels for marking contents and date filled.

2. Storage of Solid Waste: DOT-approved 55-gallon steel drums, closable lids, complete with labels for marking contents and date filled.

1.4 VEHICULAR ACCESS AND PARKING

A. Access Roads:

1. Existing Roads: Reasonable use of existing on-Site roads for construction traffic is permitted subject to the following conditions:

1. Do not interrupt or interfere with traffic on roads at any time except where open-trench crossings are specified on the Drawings and proper notice regarding open-trench crossings has been given to ENGINEER.

2. Improve existing roads as CONTRACTOR may require to perform the Works.

3. Comply with weight and load size restrictions where applicable.

4. Tracked vehicles are not allowed on paved areas.

2. Maintenance and Use:

1. Maintain temporary access roads in a sound condition, properly graded, and free of ruts, washboard, potholes, ponding, ice, snow, mud, soft material, excavated material, construction equipment, and products. Maintain access roads throughout the Contract period to ensure unimpeded access for passenger automobiles as well as construction vehicles.

2. Maintain existing and permanent paved areas used for construction; promptly remove standing water and repair breaks, potholes, low areas, and other deficiencies, to maintain paving and drainage in original or specified condition.

3. Remove mud from vehicle wheels before entering public roads.

4. Prevent contamination of access roads. Immediately scrape up debris or material on access roads which is suspected to be contaminated as determined by ENGINEER; transport and place into designated area approved by ENGINEER. Clean access roads at least twice per shift.

5. ENGINEER may collect soil samples for chemical analyses from the traveling surfaces of constructed and existing access routes prior to, during, and upon completion of the Works. Excavate and dispose of clean soil contaminated by CONTRACTOR's activities at no additional cost to TRUST.

B. Parking:

1. Arrange for surface parking areas to accommodate use of construction personnel.

2. When Site space is not adequate, provide additional off-Site parking.

3. Locate parking areas as directed by ENGINEER.

4. Do not allow vehicle parking on existing pavement.

5. Designate 2 parking spaces for TRUST and ENGINEER.

6. Maintain separate parking area for construction equipment.

C. Traffic Regulation:

1. Signs, Signals, and Devices:

    1. Traffic Cones and Drums, Flares, and Lights: As approved by local jurisdictions.

    2. Flagpersons Equipment: As required by local jurisdictions.

2. Control construction vehicular parking to prevent interference with public traffic and parking, and access by emergency vehicles.

3. Monitor parking of construction personnel's vehicles. Maintain vehicular access to and through parking areas.

4. Prevent construction parking on or adjacent to access roads or in non-designated areas.

5. Provide trained and equipped flagpersons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

6. Provide signs, barricades, gatepersons, and other measures required to control traffic on the Site.

7. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

8. Consult with authority having jurisdiction; establish thoroughfares to be used for haul routes and Site access.

9. Confine construction traffic to designated haul routes.

10. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.

11. At approaches to the Site and on the Site, install traffic signs and signals at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.

12. Relocate signs, signals, and devices as work progresses, to maintain effective traffic control.

13. Remove equipment and devices at Substantial Completion.

14. Repair damage caused by installation and removal.

1.5 TEMPORARY BARRIERS AND ENCLOSURES

A. Barriers:

1. Provide barriers to prevent unauthorized entry to construction, Site office, and on-Site parking areas, and to protect existing facilities and adjacent properties from damage from CONTRACTOR's operations.

2. Provide protection for plant life designated to remain. Replace damaged plant life.

3. Protect vehicular traffic, stored materials, the Site, and structures from damage.

B. Fencing:

1. Protect and maintain integrity of existing fencing and gate.

2. Repair fencing and gate due to damage during Site work.

C. Security:

1. Initiate security program at time of mobilization to the Site.

2. Maintain security program throughout the construction period until demobilization from the Site.

3. Provide security and facilities to protect the Works and the Site from unauthorized entry, vandalism, and theft.

4. Restrict entrance of persons and vehicles into the Site.

5. Allow entrance only to authorized persons with proper identification.

6. Maintain log of workers and visitors and make available to ENGINEER on request. Include date, name, address, company employed by, company/person visited, time in and time out for each person, and record of deliveries and security incidents.

7. Do not allow cameras on the Site or photographs taken except by prior written approval of TRUST or ENGINEER.

8. If unauthorized personnel are observed on the Site, notify ENGINEER and, if so directed by ENGINEER, call upon the appropriate law enforcement officials for proper legal actions.

9. Do not permit visitors to enter the area secured by the Site security fence without the express permission of the Health and Safety Officer and ENGINEER.

10. Check that the perimeter fencing and warning signs are secure and intact on a daily basis; if deterioration of the Site security fence is observed, or if warning signs are found to be removed, bring the situation to the attention of ENGINEER and immediately rectify.

11. Keep access gate to the Site closed except for passage of authorized personnel and vehicles.

1.6 TEMPORARY CONTROLS

A. Water Control:

1. Maintain excavations free of water.

2. Protect the Site from puddling or running water. Grade the Site to drain. Provide water barriers as necessary to protect the Site from soil erosion.

3. Prevent surface water runoff from leaving work areas.

4. Do not discharge decontamination water, or surface water runoff, or groundwater which may have come in contact with potentially contaminated material, off the Site or to municipal sewers.

5. Prevent precipitation from infiltrating or from directly running off stockpiled materials. Cover stockpiled waste materials with an impermeable liner during periods of work stoppage including at the end of each working day and as directed by ENGINEER.

6. Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.

7. Dispose of water in a manner not injurious to public health or safety, to property, or to any part of the Works completed or under construction.

8. Provide, operate, and maintain necessary equipment appropriately sized to keep excavations, staging pads, and other work areas free from water.

9. Contain water from stockpiled waste materials. Transfer potentially contaminated surface waters to a low spot within the footprint of the landfill.

10. Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for the operation of the pumping equipment.

B. Dewatering:

1. Dewater the various parts of the Works including, without limitation, excavations, structures, foundations, and work areas.

2. Employ construction methods, plant, procedures, and precautions that will ensure the Works, including excavations, are stable, free from disturbance, and dry.

3. Dewatering Methods: Includes sheeting and shoring; groundwater control systems; surface or free water control systems employing ditches, diversions, drains, pipes and/or

pumps; and any other measures necessary to enable the whole of the Works to be carried out in the dry.

4. Provide sufficient and appropriate labor, plant, and equipment necessary to keep the Works free of water including standby equipment necessary to ensure continuous operation of dewatering system.

5. Take precautions necessary to prevent uplift of any structure or pipeline and protect excavations from flooding and damage due to surface runoff.

C. Erosion and Sediment Control:

1. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other work areas. Prevent erosion and sedimentation.

2. Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, regrade, or otherwise develop in such a way as to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as directed by ENGINEER.

3. Provide and maintain temporary measures which may include, but are not limited to, silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes, and any other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off the Site or to other areas of the Site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction.

4. Hay or Straw Bale:

    1. Wire bound or string tied.

    2. Securely anchored by at least 2 stakes or rebars driven through the bale 12 to 18 inches into the ground.

    3. Chinked (filled by wedging) with hay or straw to prevent water from escaping between the bales.

    4. Entrenched a minimum of 4 inches into the ground.

5. Silt Fence:

    1. An assembled, ready to install unit consisting of geotextile attached to driveable posts.

    2. Geotextile: Uniform in texture and appearance having no defects, flaws, or tears that would affect its physical properties. Contain sufficient ultraviolet ray inhibitor and stabilizers to provide a minimum 2-year service life from outdoor exposure.

3. Net Backing: Industrial polypropylene mesh joined to the geotextile at both top and bottom with double stitching of heavy-duty cord. Minimum netting width of 2 1/2 feet.

4. Posts: Sharpened wood approximately 2 inches square protruding below the bottom of geotextile to allow a minimum of 1 1/2 feet embedment. Post spacing not to exceed 8 feet. Securely fasten each post to the geotextile and net backing by staples suitable for such purpose.

6. Plan construction procedures to avoid damage to, or work or equipment encroachment onto water bodies or drainage ditch banks. In the event of damage, promptly take action to mitigate the effects of such damage. Restore the affected bank or water body to its existing condition.

7. Installation:

1. Construct temporary erosion control items in accordance with the typical sections and elevation controls shown on the Drawings. Actual alignment and/or location of the various items as directed by ENGINEER.

2. Do not construct bale barriers and silt fence in flowing streams or in swales where there is the possibility of a washout.

3. Check erosion and sediment control measures weekly and after each rainfall. During prolonged rainfall, check daily.

4. Bales and/or silt fence may be removed at the beginning of the work day, but shall be replaced at the end of the work day.

5. Whenever sedimentation is caused by stripping vegetation, regrading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.

6. Prior to or during construction, ENGINEER may require the installation or construction of improvements to prevent or correct temporary conditions on the Site. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to the specific condition. Temporary improvements shall remain in place and in operation as necessary or until otherwise directed by ENGINEER.

7. Pay close attention to the repair of damaged bales, end runs, and undercutting beneath bales.

8. Unless otherwise specified on the Drawings or directed by ENGINEER, remove temporary erosion and sediment control devices upon completion of the Works. Spread accumulated sediments to form a suitable surface for seeding or dispose of, and shape the area to permit natural drainage; all to the satisfaction of ENGINEER. Materials once removed become the property of CONTRACTOR.

8. Construct fill areas by selective placement to avoid erosive surface silts or clays.

9. Do not disturb existing embankments or embankment protection.

10. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

11. Unless specified otherwise, provide erosion and sediment control in accordance with the State of Indiana regulations.

12. If soil and debris from the Site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where in ENGINEER's determination it is undesirable, remove the accumulation and restore the area to its original condition.

13. Stockpiled material not used within a 14 day period must be stabilized by temporary seeding, tarping, or by installing silt fencing around the perimeter of the stockpile.

D. Pest Control: Provide methods, means, and facilities to prevent pests and insects from entering or remaining in the Works.

E. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading the Works.

F. Noise Control:

1. Provide methods, means, and facilities to minimize noise produced by construction operations.

2. If machinery, motors, pumps, and other similar equipment must be operated beyond normal working hours, keep the noise below a level acceptable to ENGINEER by housing the equipment as necessary.

3. Provide and use sufficient muffling devices that will minimize vehicle and equipment noise levels in the construction area.

G. Dust and Particulate Control:

1. Execute the Works by methods to minimize raising dust from construction operations.

2. Implement and maintain dust and particulate control measures immediately during construction and in accordance with the action levels specified in Section 01351.

3. Provide positive means to prevent airborne dust from dispersing into atmosphere. Use a water misting system for dust and particulate control.

4. Do not use chemical means for a water misting system for dust and particulate control without ENGINEER's prior written approval.

5. As a minimum, use appropriate covers on trucks hauling fine or dusty material and use watertight vehicles to haul wet materials.

6. Prevent dust from becoming a nuisance to adjacent property owners or occupants.

7. ENGINEER may stop work at any time when CONTRACTOR's control of dusts and particulates is inadequate for the wind conditions present at the Site, or when the air quality monitoring indicates that the release of fugitive dusts and particulates into the atmosphere equals or exceeds the specified levels.

8. In the event that CONTRACTOR's dust and particulate control is not sufficient for controlling dusts and particulates into the atmosphere, work shall be discontinued and a meeting held between ENGINEER and CONTRACTOR to discuss the procedures that CONTRACTOR proposes to resolve the problem. Make all necessary changes to operations prior to resuming any excavation, handling, processing, or any other work that may cause a release of dusts or particulates.

H. Pollution Control:

1. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious toxic substances and pollutants produced by construction operations.

2. Be prepared to intercept, clean up, and dispose of spills or releases that may occur whether on land or water. Maintain materials and equipment required for cleanup of spills or releases readily accessible on the Site.

3. Promptly report spills and releases potentially causing damage to the environment to:

    1. Authority having jurisdiction or an interest in the spill or release including any conservation authority, water supply authorities, drainage authority, road authority, fire department, etc.

    2. The owner of the pollutant, if known.

    3. The person having control over the pollutant, if known.

    4. ENGINEER.

4. Contact the manufacturer of the pollutant if known and ascertain the hazards involved, precautions required, and best measures to be used in any cleanup or mitigating action.

5. Take immediate action using available resources to contain and mitigate the effects on the environment and persons from any spill or release.

6. Volatile Organic Control:

    1. In addition to requirements of Section 01351, monitor air quality for volatile organics at the security fence every other hour during contaminated materials excavation and management activities, and maintain a log of the air quality readings. If air quality monitoring indicates that the release of volatile organics in the air at the Site boundary exceeds the Level C threshold for air quality, implement corrective actions to control volatile organics. If actions are not sufficient to control the release of volatile organics within an hour of identification of the air quality problem, the work resulting in the excessive volatiles organic emissions shall be suspended and a meeting held between ENGINEER and CONTRACTOR to discuss the additional methods that CONTRACTOR proposes to control the release of volatile organics.

Make all necessary changes at no additional cost to TRUST prior to resuming the Works.

2. In addition, if ENGINEER's monitoring of the ambient air at the Site perimeter indicates that the concentration of contaminants in the air exceed unacceptable concentrations of contaminants in the air, modify operations to minimize such off-Site impacts.

I. Equipment Decontamination:

1. Do not commence work involving equipment contact with potentially contaminated material until the Equipment Decontamination Facility is operational.

2. Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.

3. Perform equipment decontamination on CONTRACTOR-constructed equipment decontamination pad.

4. At a minimum, perform the following steps during equipment decontamination:

1. Mechanically remove packed dirt, grit, and debris by scraping and brushing without the use of steam or high-pressure water to reduce the amount of water needed and to reduce the amount of contaminated rinsate generated.

2. Use high-pressure, low-volume, hot water or steam supplemented by detergents or solvents as appropriate and as approved by ENGINEER.

3. Pay particular attention to tire treads, equipment tracks, springs, joints, sprockets, and undercarriages.

4. Scrub surfaces with long handle scrub brushes and a cleaning agent.

5. Rinse off and collect cleaning agent.

6. Air dry equipment in the Clean Zone before removing from the Site or travel on clean areas.

7. Perform an assessment as directed by ENGINEER to determine the effectiveness of the decontamination.

5. Maintain an inspection record on the Site which includes:

1. Equipment descriptions with identification numbers.

2. Time and date entering the decontamination facility.

3. Time and date exiting the decontamination facility.

4. Name of the inspector with comment stating that decontamination was performed and completed.

6. Each piece of equipment will be inspected by ENGINEER after decontamination and prior to removal from the Site and/or travel on clean areas. ENGINEER will have right to require additional decontamination to be completed if deemed necessary.

7. Take appropriate measures necessary to minimize the drift of mist and spray during decontamination including the provision of wind screens.

8. Collect decontamination wastewaters and sediments which accumulate on the equipment decontamination pad. Transfer wastewaters to low lying spot within the landfill footprint or DOT-approved drums.

9. Transfer sediments to soil staging area.

10. Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields.

11. Have on hand sufficient pumping equipment, of adequate pumping capacity and associated machinery and piping in good working condition for ordinary emergencies, including power outage, and competent workers for the operation of the pumping equipment. Maintain piping and connections in good condition and leak-free.

1.7 PROJECT IDENTIFICATION

A. Provide 8-foot wide by 6-foot high project sign of exterior grade plywood and wood frame construction, painted, with die cut vinyl, self-adhesive letters, to ENGINEER's design and colors.

B. Project, names of TRUST, ENGINEER, CONTRACTOR, and major subcontractors.

C. Erect on the Site at location established by ENGINEER.

D. No other signs are allowed without TRUST's prior written permission except those required by law.

1.8 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.

B. Remove underground installations to a minimum depth of 2 feet.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original and functional condition.

1.9 MEASUREMENT AND PAYMENT

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

B. ENGINEER's Field Office:

1. Schedule of Prices Item No. 01500/1.

2. Payment Basis: Lump sum price. Includes supplying, installing, and maintaining the ENGINEER's field office; office furnishings; and water service.

C. Personnel Hygiene/Decontamination Facility:

1. Schedule of Prices Item No. 01500/2.

2. Payment Basis: Lump sum price. Includes supplying, installing, maintaining, cleaning, and stocking the Personnel Hygiene/Decontamination Facility, Emergency First-aid Facility, and toilet facilities; personnel hygiene and decontamination materials; toilets; wastewater and potable water holding tanks.

D. Equipment Decontamination Facility:

1. Schedule of Prices Item No. 01500/3.

2. Payment Basis: Lump sum price. Includes constructing the Equipment Decontamination Facility; maintaining the facility for the duration of the Works.

E. Site Security:

1. Schedule of Prices Item No. 01500/4.

2. Measurement Basis: By the day as determined from daily timesheets provided by CONTRACTOR and submitted to ENGINEER on a daily basis for approval.

3. Payment Basis: Unit price. Includes provision of 24-hour Site security; supply and maintenance of security office and equipment at the entrance gate.

END OF SECTION

SECTION 01600

PRODUCT REQUIREMENTS

1.1 SECTION INCLUDES

A. Product options.

B. Product substitutions.

C. Product delivery and handling requirements.

D. Product storage and handling requirements.

E. Measurement and payment.

1.2 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any approved product meeting those standards or descriptions.

B. Products Specified by Naming One or More Manufacturers With a Provision Not Prohibiting Substitutions: Products of manufacturers named and meeting specifications; options or substitutions allowed in accordance with the General Conditions. Submit a request for substitution for any manufacturer not named in accordance with the following Article.

C. Products Specified by Naming One or More Manufacturers With a Provision Prohibiting Substitutions: Products of manufacturers named and meeting specifications, no options or substitutions allowed.

1.3 PRODUCT SUBSTITUTIONS

A. The General Conditions specifies requirements and procedures for submitting requests for substitutions after the Notice of Award.

B. Document each request with complete data substantiating compliance of proposed substitution with the Contract Documents.

C. A request for substitution constitutes a representation that CONTRACTOR:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

2. Will provide the same warranty for the substitution as for the specified product.

3. Will coordinate installation and make changes to other Works which may be required for the Works to be complete at CONTRACTOR's expense and at no additional cost to TRUST.

4. Waives claims for additional costs or time extension which may subsequently become apparent.

5. Will reimburse TRUST for review or redesign services.

D. Substitutions will not be considered when they are indicated or implied on product data submittals without separate written request.

E. Substitution Submittal Procedure after the Notice of Award:

1. Submit 3 copies of request for substitution for consideration. Limit each request to 1 proposed substitution.

2. Submit product data and certified test results and other data as required by the General Conditions attesting to the proposed product equivalence. Burden of proof is on CONTRACTOR.

3. ENGINEER will notify CONTRACTOR in writing of decision to accept or reject request.

4. ENGINEER will be sole judge as to the acceptance or rejection of CONTRACTOR's request.

5. In the event CONTRACTOR obtains ENGINEER's approval for the use of products other than that which is shown or specified, CONTRACTOR shall, at CONTRACTOR's own expense and using methods approved by ENGINEER, make all changes to the Works, including structures, piping, electrical, equipment, and controls, that may be necessary to accommodate this product.

1.4 PRODUCT DELIVERY AND HANDLING REQUIREMENTS

A. Make all arrangements for transportation, delivery, and handling of products required for prosecution and completion of the Works.

B. Shipments of products to CONTRACTOR or Subcontractors shall be delivered to the Site only during regular working hours. Shipments shall be addressed and consigned to the proper party giving name of Project, street number, and city. Do not deliver shipments to TRUST except where otherwise directed in writing.

C. Provide advance notice of delivery of products to the Site as required in other Sections. Do not deliver products of any kind to the Site until approval in writing has been applied for and obtained by CONTRACTOR from ENGINEER.

D. Arrange delivery of products to the Site in accordance with work sequence and in ample time to facilitate inspection prior to installation. Schedule deliveries to limit requirement for storage at the Site to the practical minimum.

E. Coordinate deliveries to avoid conflict with the Works and conditions at the Site and to accommodate the following:

1. Work of Other Contractors, or TRUST.

2. Limitations of storage space.

3. Availability of equipment and personnel for handling products.

4. TRUST's use of the Site.

F. Do not have products delivered to the Site until related Shop Drawings or Samples have been approved by ENGINEER.

G. Do not have products delivered to the Site until required storage facilities have been provided.

H. Transport and handle products in accordance with manufacturers' instructions.

I. Immediately on delivery, inspect shipments to ensure that products comply with requirements of the Contract Documents and reviewed submittals, quantities are correct, and products are undamaged.

J. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.5 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Limit on-Site storage of products to areas shown on the Drawings or otherwise approved by ENGINEER.

B. Make all arrangements and provisions necessary for storage of materials and equipment.

C. Place all excavated materials, construction equipment, and materials and equipment to be incorporated into the Works so as not to injure any part of the Works or existing facilities and so that free access can be had at all times to all parts of the Works and to all utility service company installations in the vicinity of the Works.

D. Store and protect products in accordance with manufacturers' recommendations and instructions and requirements of Specifications, with seals and labels intact and legible.

E. Store sensitive products in weathertight, climate-controlled enclosures. Protect products subject to ultraviolet degradation from direct exposure to sunlight.

F. For exterior storage of fabricated products, place on sloped supports, above ground.

G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.

H. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

I. Furnish equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

J. Arrange storage of products to permit easy access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

K. Store materials and equipment neatly and compactly, and in locations that will cause a minimum of inconvenience to Other Contractors, public travel, adjoining owners, tenants, and occupants.

L. Protect delivered products from contamination or damage.

M. Do not use lawns, grass plots, or other private property for storage purposes without written permission of TRUST or other person in possession or control of such premises.

N. CONTRACTOR shall be fully responsible for loss or damage to stored products, materials, and equipment.

1.6 MEASUREMENT AND PAYMENT

A. No separate payment will be made for work under this Section.

END OF SECTION

SECTION 01700

EXECUTION REQUIREMENTS

1.1 SECTION INCLUDES

A. Examination.

B. Field surveying.

C. Restoration.

D. Progress cleaning.

E. Final cleaning.

F. Final decontamination.

G. Removal and disposal.

H. Protection of installed work.

I. Closeout procedures.

J. Project record documents.

K. Warranties.

L. Measurement and payment.

1.2 EXAMINATION

A. Prior to commencement of work at the Site, inspect the Site with ENGINEER to review and establish the condition of surface features including existing roads, parking areas, buildings, wells, trees and other plants, grassed areas, fencing, service poles, wires, paving, and survey bench marks or monuments on or adjacent to the Site which may be affected by the Works. This inventory shall be mutually agreed between ENGINEER and CONTRACTOR and shall not thereafter be subject to dispute. Such inventory as may be amended, from time to time, will be used by ENGINEER to check compliance by CONTRACTOR with the requirements of the Contract Documents.

B. Provide ongoing review, inspection, and attendance during performance of the Works to properly document conditions. Promptly inform ENGINEER of any existing condition at the Site affected by the Works which may require restoration, repair, or replacement. Do not cover up any of the Works without prior approval from ENGINEER.

C. Maintain and protect existing Site structures and facilities from damage which may be affected by the Works while work is in progress. Repair or replace damage resulting from the Works to ENGINEER's approval.

D. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance by CONTRACTOR of existing conditions.

E. Verify that existing substrate is capable of structural attachment of new work being applied or attached or that existing or previously constructed surfaces are ready to receive subsequent work.

F. Examine and verify specific conditions described in individual Sections.

G. Verify that utility services are available, of the correct characteristics, and in the correct location.

1.3 FIELD SURVEYING

A. Quality Assurance:

1. Employ a land surveyor registered in the State of Indiana and acceptable to ENGINEER to perform survey work of this Article.

2. ENGINEER may, at any time, check CONTRACTOR's survey and layout work but this shall not relieve CONTRACTOR of any of its responsibilities to carry out the Works to the lines and grades set out in accordance with the Drawings and the Project Specifications or as otherwise necessary for performance of the Works in accordance with the Contract Documents.

3. Notify ENGINEER in writing at least 5 working days in advance of commencing work on any part of the construction to enable ENGINEER to establish bench marks and base lines.

4. Unless otherwise specified, ENGINEER will establish reference bench marks and base lines adjacent to the Works. CONTRACTOR shall be responsible for laying out the Works from established reference points.

B. Submittals:

1. Submit paper and digital copies of Site drawing and certificate signed by the land surveyor engaged by CONTRACTOR that the elevations and locations of the Works are in conformance with the Contract Documents. Provide digital copy in AutoCad format.

2. On request, submit documentation verifying accuracy of survey work.

C. Record Documents:

1. Maintain a complete and accurate log of control and survey work as it progresses.

2. Submit record documents under provisions of Article 1.11.

3. As-built documentation (elevations and alignment) to include:

1. Limits of relocated waste (alignment).

2. Top of waste and grading layer (contouring with elevations).

3. Top of rooting zone layer (contouring with elevations).

4. Top of topsoil layer (contouring with elevations).

5. Final grading including drainage berm alignments, ditches with slope indications, road alignments, and all other project features.

D. Survey Reference Points:

1. Locate, preserve, and protect survey control and reference points.

2. Control datum for survey is that shown on the Drawings.

3. Promptly report to ENGINEER the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

4. Make good any errors entering into the Works through CONTRACTOR failure to notify ENGINEER concerning lack of preservation of such survey reference points.

5. Accurately replace or relocate disturbed reference or survey control points based on original survey control. Make no changes without prior written notice to and approval of ENGINEER.

E. Survey Requirements:

1. Utilize recognized engineering survey practices. Locate and lay out the Works using properly calibrated instrumentation.

2. Establish elevations, lines, and levels.

3. Periodically verify layouts by same means and methods.

4. Provide reasonable and necessary opportunities and facilities for setting points and making measurements during construction.

5. Develop and make such additional detailed surveys as are needed for construction, such as bench marks, slope stakes, batterboards, stakes for establishing the design elevations of excavations and final grades, and other working points, lines, and elevations. Maintain bench marks and base lines established by ENGINEER, existing property boundaries, lines and grade hubs, and other references and construction or survey points.

F. Examination:

1. Verify locations of survey control points prior to starting work.

2. Verify set-backs, easements, and clearances, confirm Drawing dimensions and elevations.

3. Promptly notify ENGINEER of any discrepancies discovered.

1.4 RESTORATION

A. As a minimum, restoration shall mean replacement, repairs, or reconstruction to a condition at least as good as or better than the condition prior to commencement of the Works.

B. Except where specifically required otherwise by other Sections, restore areas of the Works and areas affected by the performance of the Works to conditions that existed prior to commencement of the Works and to match condition of similar adjacent, undisturbed areas.

C. Ensure that restored areas match existing grade and surface drainage characteristics, except as otherwise specified, and ensure a smooth transition from restored surfaces to existing surfaces.

D. Do not alter original conditions without prior written approval from ENGINEER.

E. Without limiting the generality of the foregoing or other requirements of the Contract Documents, preserve and protect existing features encountered at the Site during the performance of the Works.

F. Utilize construction methods and procedures during the performance of the Works which keeps disturbance and damage of whatever nature to existing conditions to the practical minimum. Where work necessitates root or branch cutting, do not proceed without ENGINEER's prior approval.

G. Ensure that quality, grades, elevations, and extent of bedding, cover, and other backfill materials including subgrades, finish grades, and thickness of pavements for roadways and parking areas are properly documented during their removal to ensure reconstruction to at least their original and functional condition.

H. Restoration Material: New, except as otherwise specified, not damaged or defective, and of the best quality for the purpose intended. Furnish evidence as to type, source, and quality of materials or products furnished when requested by ENGINEER or specified in other Sections.

I. Should any dispute arise as to the quality or fitness of materials, whether obtained on the Site or off the Site, whether previously inspected by ENGINEER prior to use or not, the decision to use any material or product in the finished Works will rest solely with ENGINEER.

J. Remove from the Site clean material not approved for reuse.

K. Handle and store products and materials in a manner to prevent damage, adulteration, deterioration, and soiling and in accordance with manufacturer's instructions when applicable.

L. Prior to commencement of restoration work, inform ENGINEER of proposed material, methods, and procedures to repair, replace, or reconstruct disturbed, damaged, or suspected damage to the Works.

M. Perform cutting, fitting, remedial, and coordination work to make the several parts of the Works fit together.

N. Except as specified otherwise, dismantle and salvage materials for reuse where practicable. Exercise due care when removing material for salvage. Repair or replace materials damaged through improper handling or through loss after removal.

O. Store and protect removed material approved for reuse in approved locations. Beginning of restoration work means acceptance of existing conditions.

1.5 PROGRESS CLEANING

A. Execute cleaning during progress of the Works and as required by the General Conditions.

B. Requirements of Regulatory Agencies:

1. In addition to the requirements herein, maintain the cleanliness of the Works and surrounding premises within the Works limits so as to comply with federal, state, and local fire and safety laws, ordinances, codes, and regulations.

2. Comply with all federal, state, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.

C. Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials on or within the Works or on the premises surrounding the Works.

1.6 FINAL CLEANING

A. Execute final cleaning prior to final Project assessment.

B. Clean debris from drainage systems.

C. Repair roads, vegetated areas, and all other areas affected by construction operations and restore them to original condition or to minimum condition specified.

D. Maintain cleaning until acceptance and occupation by OWNER.

1.7 FINAL DECONTAMINATION

A. Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from the Site.

B. Perform decontamination as specified in Section 01500 to the satisfaction of ENGINEER. ENGINEER will have right to direct CONTRACTOR to perform additional decontamination if required.

1.8 REMOVAL AND DISPOSAL

A. Remove surplus materials and temporary facilities and controls from the Site.

B. Dispose of all non-contaminated waste materials, litter, debris, and rubbish off the Site.

C. Do not burn or bury rubbish and waste materials on the Site.

D. Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

E. Do not discharge wastes into streams or waterways.

F. Dispose of the following materials at an appropriate off-Site facility identified by CONTRACTOR and approved by OWNER:

1. Debris including excess construction material, non-contaminated litter and rubbish.

2. Spent Tyvek and other disposable PPE worn during final cleaning.

3. Wastewater removed from wastewater storage tank, wastewater generated from final decontamination operations including wastewater storage tank cleaning.

4. Material from the decontamination pads.

G. Dispose of materials in accordance with Section 02120.

H. Wastewater: ENGINEER will perform sampling and analysis of stored wastewater for disposal purposes prior to removal from the Site. The results of the analyses will determine the appropriate methods of disposal. Upon receipt of the analytical results, transfer tank contents without spills or release to an off-Site disposal facility. Following completion of tank emptying, decontaminate the tank interior with a steam or high-pressure water wash supplemented by detergent (Alconox). Dispose of tank decontamination water with tank contents. CONTRACTOR shall make every effort to dispose of wastewater on the Site, in low lying spot on landfill prior to installation of final cover.

1.9 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Prohibit traffic upon landscaped areas.

D. Maintenance of Flow: Maintain the flow of water in the water distribution system and in existing sewers, drains, and watercourses. In the event that any emergency or situation should arise which requires interruption of normal operation of any existing systems, restore normal operation as soon as possible even though permission for such planned shutdown was obtained.

1.10 CLOSEOUT PROCEDURES

A. Submit written certification that the Contract Documents have been reviewed, the Works has been inspected, and that the Works is complete in accordance with the Contract Documents and in compliance with Laws and Regulations including, but not limited to, the provision of all applicable federal, state, and local health, safety, and environmental laws and regulations, including OSHA, and ready for ENGINEER's review.

B. Submit final Application for Payment identifying previous payments and amounts remaining due.

C. Complete and furnish submittals to ENGINEER that are required by governing or other authorities and by the Contract Documents. Payment shall not become due and payable until all submittals have been made acceptable to ENGINEER.

1.11 PROJECT RECORD DOCUMENTS

A. Maintain 1 set of the following record documents on the Site; record actual revisions to the Works:

1. Drawings.

2. Specifications.

3. Change Orders and other modifications to the Contract.

4. Reviewed Product data and Samples.

5. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by OWNER.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record, at each Section of the Specifications, a description of actual products installed, including the following:

1. Manufacturer's name and product model and number.

2. Product substitutions or alternates utilized.

3. Changes made by modifications.

F. Record Documents: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

2. Field changes of dimension and detail.

3. Details not on original Drawings.

G. Remove ENGINEER title block from all documents generated by CONTRACTOR.

H. Submit documents to ENGINEER with claim for final Application for Payment.

1.12 WARRANTIES

A. Obtain warranties, executed in duplicate by responsible Subcontractors and Suppliers within 14 days after completion of the applicable item of work. Except for items put into use with OWNER's permission, leave date of beginning of time of warranty open until the date of Substantial Completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties until time specified for submittal.

E. Bind in commercial quality 3-D side ring binders with durable plastic covers. Identify each binder with typed title WARRANTIES, with title of Project; name, address, and telephone number of CONTRACTOR and equipment Supplier; and name of responsible company principal. Neatly type Table of Contents, in the sequence of the Table of Contents of the Contract Documents, with each item identified with the number and title of the Section in which specified, and the name of the project or work item. Separate each warranty with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor and Supplier, with name, address, and telephone number of responsible principal.

F. For equipment or component parts of equipment put into service during construction with OWNER's permission, submit documents within 10 days after acceptance. Make other submittals prior to final Application for Payment.

G. For items of the Works for which acceptance is delayed beyond the date of Substantial Completion, furnish updated submittal within 10 days after acceptance of the affected item. The date of acceptance of such item shall be the start of the warranty period for that item.

1.13 MEASUREMENT AND PAYMENT

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

B. Demobilization and Closeout:

1. Schedule of Prices Item No. 01300/4.

2. Payment Basis: Lump sum price. Includes final decontamination of equipment, construction facilities, and materials to be removed from the Site; final removal of temporary construction and support facilities provided by CONTRACTOR; final Site cleanup; final non-contaminated waste removal and disposal; final grading; adjusting; field surveying; restoration; protection of installed work; record documents; and warranties.

END OF SECTION

SECTION 02055

SOILS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply rooting zone soil for earthen soil cover.

B. Supply topsoil for earthen soil cover.

C. Supply clay for stormwater diversion berms.

D. Supply common fill soils for landfill cover grading.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. ASTM International (ASTM):

1. D422 - Standard Test Method for Particle-Size Analysis of Soils.

2. D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

3. D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

4. D4972 - Standard Test Method for pH of Soils.

5. D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

6. D5084 - Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter.

7. E548 - Standard Guide for General Criteria Used for Evaluating Laboratory Competence.

C. United States Department of Agriculture (USDA): Soil textural classification chart.

D. United States Environmental Protection Agency (USEPA): SW-846 - Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, Third Edition and Promulgated Updates I-III, November 1986.

1.3 DEFINITIONS

A. SMDD: Standard Maximum Dry Density and in the context of this Contract means the maximum dry unit weight determined in accordance with ASTM D698.

1.3 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Materials Sources: Submit name of proposed imported fill materials sources at least 14 days prior to commencing transport of materials to the Site.

C. Geotechnical, Chemical and Agricultural Data: At least 14 days prior to commencing transport of materials to the Site, submit geotechnical data for source testing as specified in Article 2.5 for each type of fill material.

D. Samples: Submit, in airtight bag or container, minimum 25-pound Sample of each type of fill material to ENGINEER.

E. Suppliers' Certificates: Submit certificates indicating that each type of fill material meets or exceeds specified requirements.

F. Weigh Tickets: Submit at the start of the work day following delivery weigh tickets generated from weigh scale at source of fill materials delivered to the Site.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver, handle, and transport fill materials at all times in a manner and with equipment that will prevent intermixing of fill material types, segregation, or contamination.

C. Minimize stockpiling requirements. Transport material from source directly to final position where possible.

D. Stockpile fill materials on the Site in locations approved by ENGINEER.

PART 2 PRODUCTS

2.1 GENERAL

A. Imported from an approved source.

B. Free of unsuitable materials including:

1. Frozen material or material containing snow or ice.

2. Trees, stumps, branches, roots, or other wood or lumber.

3. Wire, steel, cast iron, cans, drums, or other foreign material.

4. Materials containing hazardous or toxic constituents at hazardous or toxic concentrations.

2.2 ROOTING ZONE

A. Type S1:

1. Free of rocks larger than 3 inches, very soft clays, swelling clays, or fine uniform sands that may be difficult to compact.

2. ASTM D2487 Group Symbol: Soils classified as SC, ML, CL, ML-CL, MH and/or CH.

3. USDA textural chart soil classified as sandy clay, sandy loam, silt, silt loam, clay loam, silty clay, or clay.

   a. Soil to contain less than 70-percent sand
   b. Soil to contain at least 30-percent silt and clay

2.3 TOPSOIL

A. Type S2:

1. Friable loam neither of heavy clay nor of very light sandy nature.

2. Reasonably free of roots, rocks, or lumps larger than 1 1/2 inches, weeds, vegetation, and seeds of noxious weeds, sod, pockets of coarse sand, paint, paint washout, concrete slurry, concrete chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, or other extraneous materials harmful to plant growth.

3. Acidity Range (pH): 5.8 to 7.8, determined in accordance with ASTM D4972. Topsoil that does not meet this pH range will be amended by the addition of pH adjusters approved by ENGINEER at no cost to OWNER.

4. Containing minimum 0.5 percent and maximum 20 percent organic matter determined in accordance with ASTM D2974.

5. Containing agronomic concentrations consistent with the State of Indiana's Soil Conservation Service for ammonium, cation exchange capacity, nitrate (as NO_3), percent calcium, hydrogen, magnesium, potassium, and phosphorus content for the growth of Kentucky 31 fescue or equivalent. Should imported topsoil not meet the minimum requirements, soil will be amended at no additional cost to OWNER. Minimum concentrations are as follows:

   a. Ammonium concentration = 1 ppm (NH4-N)
   b. Cation exchange capacity = 3.7 meq/100g
   c. Nitrate concentration = 2 ppm (NO3-N)
   d. Calcium = 47%

e. Hydrogen = 32%
f. Magnesium = 15%
g. Potassium = 2%
h. Phosphorus = 40 ppm

6. Capable of supporting growth of vegetation.

2.4 CLAY

A. Type S3:

1. Free of rocks larger than 2 inches, organic matter, inorganic clays of high plasticity in accordance with ASTM D2487, swelling clays, or very soft clays.

2. ASTM D2487 Group Symbol CL.

3. Compactable to 90 percent SMDD.

2.5 COMMON FILL

A. Type S4:

1. Free of rocks larger than 3 inches, very soft clays, swelling clays, or fine uniform sands that may be difficult to compact.

2. ASTM D2487 Group Symbol: Any except those described as poorly graded and except OL and OH.

3. USDA textural chart soil classified as sandy clay, sandy loam, silt, silt loam, clay loam, silty clay or clay.

2.6 SOURCE QUALITY CONTROL

A. Section 01400 - Quality Requirements: Requirements for source testing and analysis of fill materials.

B. Testing and Analyses of Rooting Zone:

1. Grain Size, ASTM D422: 1 sample per 5,000 cu yd, or portion thereof, of material required.

2. Maximum Dry Density, ASTM D698: 1 sample per 10,000 cu yd, or portion thereof, of material required.

3. Chemical Analysis: 1 sample per source and for each change in material source, or portion thereof, of material required. In accordance with Paragraph 2.6 F.

C. Testing and Analysis of Topsoil:

1. Grain Size, ASTM D422: 1 sample per 5,000 cu yd, or portion thereof, of topsoil required.

2. pH, ASTM D4972: 1 sample per 5,000 cu yd, or portion thereof, of topsoil required.

3. Organic Matter, ASTM D2974: 1 sample per 5,000 cu yd of topsoil required.

4. Ammonium, Cation Exchange Capacity, Nitrate (as NO_3), Percent Calcium, Hydrogen, Magnesium, Potassium, and Phosphorus Content, in Accordance with State-Accredited Method: 1 sample per 5,000 cu yd, or portion thereof, of topsoil required.

5. Chemical Analysis: 1 sample per source and for each change in material source, or portion thereof, of material required. In accordance with Paragraph 2.6 F.

D. Testing and Analyses of Clay:

1. Maximum Dry Density, ASTM D698: 1 sample per 5,000 cu yd, or portion thereof, of material required.

2. Particle Size, ASTM D422: 1 sample per 5,000 cu yd, or portion thereof, of material required.

3. Soil Classification, ASTM D2487: 1 sample per 5,000 cu yd, or portion thereof, of material required.

4. Chemical Analysis: 1 sample per source and for each change in material source, or portion thereof, of material required. In accordance with Paragraph 2.6 F.

E. Testing and Analysis of Common Fill:

1. Grain Size, ASTM D422: 1 sample per 10,000 cu yd, or portion thereof, of material required.

2. Chemical Analysis: 1 sample per source and for each change in material source, or portion thereof, of material required. In accordance with Paragraph 2.6 F.

F. Chemical characterization in the laboratory in accordance with the following methods:

Parameter	*Extraction/Preparation*[1]	*Analysis*[2]
TCL[2] Volatile Organic Compound	5035	8260B
TCL Semi-Volatile Organic Compound	3540C/3550B	8270C
Pesticide	3540C/3550B	8081A
PCB	3540C/3550B	8082
Herbicides	3540C/3550B	8151A
TAL[3] Metals	3050B or 3051	6010B/7000 Series
Cyanide	9013	9010 or 9012A

Notes:

(1) USEPA SW-846.
(2) TCL - Target Compound List.
(3) TAL - Target Analyte List.

G. If tests indicate materials do not meet specified requirements, change material or material source and retest.

H. Provide fill materials of each type from the same source throughout the Works.

I. In the event of changes to approved sources of fill materials during the performance of the Works, immediately advise ENGINEER of revised locations and obtain approval of such locations and fill materials prior to use in the Works.

PART 3 EXECUTION

3.1 PREPARATION

A. Obtain ENGINEER's approval to deliver fill materials to the Site and to place fill materials in on-Site stockpiles.

B. CONTRACTOR to make efforts to directly place soils instead of stockpiling.

3.2 STOCKPILING

A. Stockpile materials on the Site at locations shown on the Drawings.

B. Stockpile in sufficient quantities to meet schedule and requirements.

C. Construct stockpile sites so that they are level, well drained, free of foreign materials, and of adequate bearing capacity to support the weight of materials to be placed thereon.

D. Provide and maintain access to stockpiles.

E. Separate differing materials with substantial dividers or stockpile apart to prevent mixing.

F. Prevent intermixing of fill material types or contamination or segregation.

G. Direct surface water away from stockpile sites to prevent erosion or deterioration of materials.

H. Maintain temporary stockpile slopes not steeper than 2 horizontal to 1 vertical. In no instance shall stockpiles be greater than 15 feet in height above original surrounding grade. Place hay bales or soil erosion and sediment control fencing at the base of and around each temporary stockpile to contain soil that may be washed off the stockpile.

I. Maintain area surrounding stockpiles in a neat and tidy condition.

J. Cover stockpiled material with approved reinforced polyethylene sheeting of minimum 6-mil thickness to withstand adverse weather, wind, and other detrimental forces. Provide total protection of stockpiled material from rain and other adverse weather effects.

3.3 PLACEMENT

A. Track soil Type S1 into place using a bulldozer or equivalent machinery as approved by ENGINEER. Soil Type S1 can be placed in a single lift for minimum 12-inch layer. Areas showing inconsistent degrees of yielding or rutting shall be regraded as necessary. Proof-rolling with a smooth-drum roller and compaction shall be minimal and will be observed and approved by the ENGINEER.

B. Track soil Type S2 into place using bulldozer or equivalent machinery. Soil Type S2 can be placed in a single lift and graded in place; back blade if possible; minimum 6-inch thick layer. Areas showing inconsistent degrees of yielding or rutting shall be regraded as necessary for approval by ENGINEER.

C. Compact soil Type S4 on regraded landfill surface utilizing a sheepsfoot compactor. A minimum 5 passes shall be made over placed and graded common fill. Areas showing inconsistent degrees of yielding or rutting shall be recompacted as necessary. Proof-rolling and compaction will be observed and approved by the ENGINEER.

D. CONTRACTOR shall provide verification surveys as follows:

1. Top of waste and grading layer prior to placement of rooting zone layer.

2. Top of rooting zone layer prior to placement of topsoil layer.

3. Top of topsoil layer prior to placement of stormwater diversion berms.

3.4 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition. Grade the Site surface to prevent freestanding surface water.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 SOIL TYPE S1

A. Schedule of Prices Item No. 02055/1.

B. Measurement Basis: By the cubic yard measured in place using surveying methods of the fill materials prior to filling and following placement.

C. Payment Basis: Unit price. Includes supplying, placement, and stockpiling.

4.3 SOIL TYPE S2

A. Schedule of Prices Item No. 02055/2.

B. Measurement Basis: By the cubic yard measured in place using surveying methods of the fill materials prior to filling and following placement.

C. Payment Basis: Unit price. Includes supplying, placement, and stockpiling.

4.4 SOIL TYPE S3

A. Schedule of Prices Item No. 02055/3.

B. Measurement Basis: By the cubic yard measured in place using surveying methods of the fill materials prior to filling and following placement.

C. Payment Basis: Unit price. Includes supplying, placement, and stockpiling.

4.5 SOIL TYPE S4

A. Schedule of Prices Item No. 02055/4.

B. Measurement Basis: By the cubic yard measured in place using surveying methods of the fill materials prior to filling and following placement.

C. Payment Basis: Unit price. Includes supplying, placement, and stockpiling.

END OF SECTION

SECTION 02060

AGGREGATE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply and temporary stockpiling imported coarse aggregate for passive ventilation trench.

B. Supply and temporary stockpiling imported coarse aggregate for confluence zones and revetments.

C. Supply and temporary stockpiling imported coarse aggregate for access road.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. State of Indiana Department of Transportation (IDOT) Standards and Specifications, Section 904.

C. United States Environmental Protection Agency (USEPA): SW-846 - Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, Third Edition and Promulgated Updates I-III, November 1986.

1.3 DEFINITIONS

A. 'State Standard' in this Section shall mean State of Indiana Department of Transportation Standards and Specifications.

1.4 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Materials Sources: Submit name of proposed imported fill materials sources at least 14 days prior to commencing transport of materials to the Site.

C. Geotechnical and Chemical Data: At least 14 days prior to commencing transport of materials to the Site, submit data for source testing as specified in Article 2.3 for each type of aggregate materials.

D. Samples: Submit, in airtight containers, 100-pound sample of each type of aggregate from each source to ENGINEER.

E. Material Source Certification: If fill materials will be obtained from a state certified quarry, chemical characterization specified in Paragraph 2.3 may not be required. CONTRACTOR shall be responsible to submit to ENGINEER documentation related to the quarry operations, that includes but is not limited to the following:

1. State certification.

2. Quarry location and address.

3. TRUST's name and state permit/licensing number.

4. Reports of testing in accordance with specified standards, evidencing compliance with specified requirements.

5. Historical report information pertaining to the quarry certification.

6. Quarry Quality Assurance Plan identifying sampling procedures, sample network, analytical procedures, and analytical laboratory.

7. Statement from the quarry declaring there is no contamination in the fill materials proposed for the Project, and providing evidence that the source is clean. Fill materials will be considered uncontaminated if chemical analysis have been completed by a state-certified laboratory for parameters specified in Paragraph 2.3 and the most recent test results for every fill material proposed for the Project show that the every fill material is at or below natural background levels for the region.

F. Weigh Tickets: Submit weigh tickets generated at supplier's weigh scale of aggregate delivered to the Site the previous day.

G. Weigh Scale Calibration: Submit no later than 14 days prior to transporting fill materials to the Site a calibration chart, completed within the previous 6 months, for weigh scale. Weigh scale shall be calibrated by the State of Indiana agency.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver, handle, and transport fill materials at all times in a manner and with equipment that will prevent intermixing of aggregate types, segregation, or contamination.

C. Minimize stockpiling requirements. Transport material from source directly to final position where possible.

D. Stockpile fill materials on the Site in locations approved by ENGINEER.

PART 2 PRODUCTS

2.1 GENERAL

A. Imported from an approved source and composed of clean, graded, hard, durable, uncoated particles obtained from deposits of gravel or sand, talus rock, quarried rock, or other suitable granular materials.

B. Free of unsuitable materials including:

1. Frozen material or material containing snow or ice.

2. Trees, stumps, branches, or other wood or lumber.

3. Wire, steel, cast iron, cans, drums, or other foreign material.

4. Materials containing hazardous or toxic constituents at hazardous or toxic concentrations.

2.2 COARSE AGGREGATE

A. Type A1 (Passive Ventilation Trench): IDOT 904.03, No. 8, Class D.

B. Type A2 (Construction Entrance): Natural material meeting IDOT 904.05, nominal percent passing 2-inch gradation (No. 2).

C. Type A3 (Culvert Protection): Natural material meeting IDOT 904.04, Class 1 riprap.

D. Type A4 (Access Road): Natural material meeting IDOT 904.03, Class B, densely graded size number 53 aggregate.

E. Type A5 (Channel Lining and Aprons): Natural material meeting IDOT 904.04, revetment riprap.

2.3 SOURCE QUALITY CONTROL

A. Section 01400 - Quality Requirements: Requirements for source testing and analysis of aggregate materials.

B. Testing and Analysis of Coarse Aggregate Types A1, A2, A3, A4, and A5:

1. Grain Size Distribution: Type A1, A2, and A4 in accordance with IDOT 904.03(e). Type A3 and Type A5 in accordance with IDOT 904.04(f). Analyze once per source of material.

2. Chemical Analysis: 1 sample per source and for each change in material source cu yd, or portion thereof, of aggregate required. In accordance with Paragraph 2.3 C.

C. Chemical analyses will be performed in the laboratory in accordance with the following methods:

Parameter	*Extraction/Preparation*[1]	*Analysis*[2]
TCL[2] Volatile Organic Compound	5035	8260B
TCL Semi-Volatile Organic Compound	3540C/3550B	8270C
Pesticide	3540C/3550B	8081A
PCB	3540C/3550B	8082

Herbicides	3540C/3550B	8151A
TAL[3] Metals Series	3050B or 3051	6010B/7000
Cyanide	9013	9010 or 9012A

Notes:

(1) USEPA SW-846.
(2) TCL - Target Compound List.
(3) TAL - Target Analyte List.

D. If tests indicate materials do not meet specified requirements, change material or material source and retest.

E. Provide fill materials of each type from the same source throughout the Works.

F. In the event of changes to approved sources of materials during performance of the Works, immediately advise ENGINEER of revised locations and obtain approval of such locations and fill materials prior to use in the Works.

PART 3 EXECUTION

3.1 PREPARATION

A. Obtain ENGINEER's approval prior to placing material in on-Site stockpiles.

3.2 STOCKPILING

A. Stockpile materials on the Site at locations shown on the Drawings.

B. Stockpile in sufficient quantities to meet schedule and requirements.

C. Construct stockpile sites so that they are level, well drained, free of foreign materials, and of adequate bearing capacity to support the weight of materials to be placed thereon.

D. Provide and maintain access to stockpiles.

E. Separate differing materials with substantial dividers or stockpile apart to prevent mixing.

F. Prevent intermixing of aggregate types or contamination or segregation.

G. Direct surface water away from stockpile site to prevent erosion or deterioration of fill materials.

H. Maintain temporary stockpile slopes not steeper than 2 horizontal to 1 vertical. In no instance shall stockpiles be greater than 15 feet in height above original surrounding grade. Place hay bales or soil erosion and sediment control fencing at the base of and around each temporary stockpile to contain soil that may be washed off the stockpile.

I. Maintain area surrounding stockpiles in a neat and tidy condition.

J. Cover stockpiled fill materials with approved reinforced polyethylene sheeting of minimum 6-mil thickness to withstand adverse weather, wind, and other detrimental forces. Provide total protection of stockpiled fill material from rain and other adverse weather effects.

3.3 PLACEMENT

A. Compact Type A4 aggregate materials utilizing a vibratory roller compactor. A minimum 5 passes shall be made over, placed and graded aggregate, before placing next lift. Areas showing inconsistent degrees of yielding or rutting shall be recompacted, as necessary. Proof-rolling and compaction shall be observed and approved by the ENGINEER.

B. Revetment (Type A5) and Class 1 (Type A3) riprap may be placed by dumping and shall be placed to the required thickness. The finished surface shall be free from clusters of small stones or of large ones. The finished surface shall vary from a true plane no more than 9 inches (225 mm) for revetment riprap or 18 inches (450 mm) for Class 1 riprap but shall not be less than the minimum depth specified.

C. For grouted riprap, after the aggregate has been placed and accepted, all openings shall be filled with cement grout. The finished surface shall be approximately smooth, solid, and true to line, grade, and section. Grout shall be composed of one part Portland cement and four parts fine aggregate. The Portland cement and fine aggregate shall be dry-mixed to a uniform mixture. Water shall be added as the mixing continues until the grout attains a consistency that shall allow it to flow into the openings.

3.4 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition. Grade the Site surface to prevent freestanding surface water.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 AGGREGATE TYPE A1

A. Schedule of Prices Item No. 02060/1.

B. Measurement Basis: By the ton measured on a weigh scale at the source.

C. Payment Basis: Unit price. Includes supplying and stockpiling.

4.3 AGGREGATE TYPE A2

A. Schedule of Prices Item No. 02060/2.

B. Measurement Basis: By the ton measured on a weigh scale at the source.

C. Payment Basis: Unit price. Includes supplying and stockpiling.

4.4 AGGREGATE TYPE A3

A. Schedule of Prices Item No. 02060/3.

B. Measurement Basis: By the ton measured on a weigh scale at the source.

C. Payment Basis: Unit price. Includes supplying and stockpiling.

4.5 AGGREGATE TYPE A4

A. Schedule of Prices Item No. 02060/4.

B. Measurement Basis: By the ton measured on a weigh scale at the source.

C. Payment Basis: Unit price. Includes supplying and stockpiling.

4.6 AGGREGATE TYPE A5

A. Schedule of Prices Item No. 02060/5.

B. Measurement Basis: By the ton measured on a weigh scale at the source.

C. Payment Basis: Unit price. Includes supplying and stockpiling.

END OF SECTION

SECTION 02074

GEOTEXTILE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Geotextile for the passive ventilation trench and perimeter access road.

B. Geotextile for channel lining and aprons.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. ASTM International (ASTM):

1. D3786 - Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method.

2. D4355 - Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).

3. D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.

4. D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.

5. D4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.

6. D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile.

7. D4833 - Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.

8. D4873 – Standard Guide for Identification, Storage and Handling of Geosynthetic Rolls and Samples.

9. D5199 - Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.

10. D5261 - Standard Test Method for Measuring Mass Per Unit Area of Geotextiles.

C. Indiana Department of Transportation (IDOT): IDOT 918.02.

1.3 DEFINITIONS

A. AOS: Apparent Opening Size.

B. Geotextile: Synthetic fabric for use in geotechnical filter, separation, stabilization, or erosion control applications.

C. Minimum Average Roll Value: Average value for a specified parameter less 2 standard deviations.

1.4 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Samples: Submit a representative sample at least 6 feet by roll width for each type of geotextile no later than 10 days prior to ordering.

C. Product Data: Submit no later than 10 days prior to ordering.

D. Manufacturer's Installation Instructions: Submit at least 14 days prior to installation. Include installation, handling, storage, and repair instructions.

E. Manufacturer's Certificates: Certificates pertaining to the rolls of material delivered to the Site shall accompany the rolls. Each roll shall be identified by a unique manufacturing number. The quality control certificate shall include results of at least the following tests: unit weight, tensile strength, elongation at break, Mullen Burst strength, puncture strength, permittivity, apparent opening size, ultraviolet stability, and manufacturer's records for storage, handling, and shipping of geotextile. The quality control certificates shall be signed by a responsible party employed by the manufacturer and shall be notarized. Materials and rolls which are in non-compliance with the minimum required properties will be rejected.

1.5 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution Requirements: Requirements for closeout submittals.

B. Warranties: Completed original warranty forms filled out in TRUST's name and registered with manufacturer.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum 20 projects, 10 million sq ft manufacturing, and 3 years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver geotextile bearing manufacturer's seals and labels intact. Clearly label each roll to show geotextile identification, date of manufacture, lot number, analysis of contents, and special instructions.

C. Store and handle geotextile in accordance with manufacturer's recommendations and ASTM D4873, indoors, in manufacturer's original covers, and protect from moisture, dust, light, and heat.

D. Notify ENGINEER 3 days in advance of delivery to the Site. Perform joint inspection with ENGINEER upon delivery. Defects or damage from shipping and handling will be grounds for rejection of a portion of geotextile or of the entire geotextile roll at the discretion of ENGINEER. Remove roll from the Site and replace with new material.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01500 - Temporary Facilities and Controls: Requirements for temporary controls.

B. Install geotextile in dry conditions and in accordance with manufacturer's instructions.

C. Suspend installation operations whenever climatic conditions, as determined by ENGINEER, are unsatisfactory for placing geotextile to the requirements of this Section.

1.9 SEQUENCING AND SCHEDULING

A. Section 01300 - Administrative Requirements: Requirements for coordination.

B. Coordinate installation of geotextile with surface preparation.

C. Sequence work with work of other Sections.

1.10 MANUFACTURER'S WARRANTY

A. Section 01700 - Execution Requirements: Requirements for warranties.

B. Provide 1-year manufacturer's warranty for installation.

C. Fill out original warranty forms in TRUST's name and register with manufacturer.

PART 2 PRODUCTS

2.1 GEOTEXTILE (NON-WOVEN)

A. Geotextile for passive ventilation trench and perimeter access road (Type G1): Any roll in a lot shall meet or exceed the following values:

Test	*Unit*	*Test Method*	*Minimum Average Roll Value*
Unit Weight	ounce per sq yd	ASTM D5261	8
Ultra Violet Degradation	percent retained/ number of hours	ASTM D4355	50/500

Tensile Strength	pound	ASTM D4632	220
Elongation at Break	percent	ASTM D4632	50
Puncture Strength	pound	ASTM D4833	120
Permittivity	sec^{-1}	ASTM D4491	1.30
Trapezoid Tear Strength	pound	ASTM D4533	90
Apparent Opening Size (AOS)	sieve number	ASTM D4751	80

B. Geotextile for revetments (Type G2): IDOT 918.02.

2.2 SOURCE QUALITY CONTROL

A. Section 01400 - Quality Requirements: Requirements for source testing and analysis of geotextile.

B. Manufacturer Quality Control:

1. Sample and test geotextile material, at a minimum, once every 100,000 sq ft for unit weight, tensile strength, elongation, puncture strength, and trapezoid tear strength to demonstrate that the material conforms to requirements specified in Paragraph 2.1 A. Test for UV stability and apparent opening size, at a minimum, once every month.

2. Sampling shall, in general, be performed on sacrificial portions of the material such that repair of the material is not required.

3. If geotextile sample fails to meet the quality control requirements of this Section, sample and test each roll manufactured in the same lot, or at the same time, as the failing roll. Sampling and testing of rolls shall continue until a pattern of acceptable test results is established.

4. At geotextile manufacturer's discretion and expense, additional testing of individual rolls may be performed to more closely identify the non-complying rolls and/or to qualify individual rolls.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Verify that surfaces and the Site conditions are ready to receive work.

3.2 PREPARATION

A. Prior to geotextile placement, where possible roll the surface with a smooth drum steel or pneumatic roller so as to be free of irregularities, loose earth, and abrupt changes in grade.

Provide the necessary equipment and personnel to maintain an acceptable supporting surface during fabric installation.

B. Examine geotextile for defects including rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or handling.

C. Remove defective or damaged geotextile from the Site.

3.3 INSTALLATION

A. Notify ENGINEER at least 24 hours in advance of intention to commence placement of geotextile.

B. Do not permit placement of overlay materials until ENGINEER has inspected and approved installation of geotextile.

C. Obtain approval of ENGINEER prior to installation of geotextile.

D. Place the geotextile on a prepared base as shown on the Drawings.

E. Unfold or unroll geotextile in accordance with manufacturer's instructions, directly on the prepared base, in conditions which will prevent damage to both the geotextile and the base grade. Unsuitable conditions include, but are not limited to moderate to high wind conditions.

F. Overlap dimensions and the method of joining adjacent sheets shall, as a minimum, be in conformance with manufacturer's instructions but shall not be less than 2 feet.

G. During placement of geotextile, do not entrap stones in the geotextile.

H. Position and deploy geotextile to minimize handling. Lay smooth and free of tension, stress, folds, or creases. Protect properly placed geotextile from displacement, contamination by surface runoff, or damage, until and during placement of overlaid materials.

I. Do not permit passage of vehicular traffic directly on geotextile at any time.

J. Place geotextile by unrolling onto graded surface and retain in position as specified.

K. Remove and replace damaged or deteriorated geotextile as directed by ENGINEER.

3.4 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspection and testing.

B. ENGINEER will inspect geotextile in place for tears, overlaps, and consistency before placing materials thereon. Damaged sections, as judged by ENGINEER, will be marked and their removal from the work area recorded. Repair minor damage and minor defects as specified in manufacturer's procedures when approved by ENGINEER to ENGINEER's satisfaction.

C. ENGINEER will verify that weather conditions (air temperature, non-excessive wind, and lack of precipitation) are acceptable for panel placement.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 GEOTEXTILE G1

A. Schedule of Prices Item No. 02074/1.

B. Measurement Basis: By the square yard measured in place of area covered with geotextile.

C. Payment Basis: Unit price. Includes supply, installation, seaming, connection to penetrations, testing, anchoring, overlaps, repairs, manufacturer's field services.

4.3 GEOTEXTILE G2

A. Schedule of Prices Item No. 02074/2.

B. Measurement Basis: By the square yard measured in place of area covered with geotextile.

C. Payment Basis: Unit price. Includes supply, installation, seaming, connection to penetrations, testing, anchoring, overlaps, repairs, manufacturer's field services.

END OF SECTION

SECTION 02120

OFF-SITE TRANSPORTATION AND DISPOSAL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Supply, operation, and maintenance of transport vehicles/containers.

B. Preparing transport vehicles/containers for off-Site transportation.

C. Loading and securing materials in transport vehicles/containers.

D. Decontaminating vehicles/containers prior to leaving the Site.

E. Transporting the following materials from the Site to approved TSDFs:

1. White goods (e.g., refrigerators, stoves, washers, dryers).

2. Tires.

3. Portion of existing fencing.

F. Preparation of shipping documents including bills of lading.

G. Maintaining transportation records as required by regulatory agencies.

H. Obtaining documents from TSDFs.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. United States Federal Government - Code of Federal Regulations (CFR):

1. 49 CFR 171 - General Information, Regulations, and Definitions.

2. 49 CFR 172 - Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements.

3. 49 CFR 173 - Shippers - General Requirements for Shipments and Packaging.

4. 49 CFR 177 - Carriage by Highway.

1.3 DEFINITIONS

A. DOT: Department of Transportation.

B. Non-hazardous Materials: Materials not regulated by 40 CFR 261, 40 CFR 273, 40 CFR 279, and 40 CFR 761, or equivalent state regulation.

C. RCRA Characteristic Wastes: Materials as defined in 40 CFR 261 Subpart C.

D. RCRA Listed Wastes: Materials as defined in 40 CFR 261 Subpart D.

E. TSDF: Treatment, storage, or disposal facility.

1.4 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Transportation and Disposal Proposal: Submit for review and approval a proposal for transportation and disposal of materials 14 days prior to transportation and disposal of materials from the Site. Include relevant transporter and TSDF identification and regulatory classification and status, methods of transportation and disposal, contingency plans for spills during transportation, and schedule for transportation and disposal. Identify TSDF-specific requirements for waste profiling sampling and analyses to determine acceptance.

C. TSDF Requirements:

1. For each TSDF accepted by TRUST, provide TSDF requirements to ENGINEER including:

1. Any TSDF-specific packaging requirements for shipments.

2. TSDF restrictions by wastestream which may cause rejection of transported materials.

3. Any wastestream-specific pre-approvals required by federal or state agencies prior to acceptance of wastestream by TSDF.

4. Restrictions on delivery schedules.

5. Type and frequency of routine additional sampling and analysis of materials by wastestream which are required during transport and disposal activities prior to delivery to TSDF.

6. Additional sampling and analysis of materials that will be conducted by TSDF during receipt of shipments to verify waste profiles.

2. Each TSDF shall disclose the name and telephone number of the contact at the lead agency responsible for TSDF primary permits who has knowledge of and can verify the existence of existing corrective action programs which may impact the ability of TSDF to accept materials from the Site.

D. Agency Approvals: For any wastestream requiring agency pre-approval, provide letters of approval from applicable federal and state agencies which approve the disposal of materials from the Site at each proposed TSDF 14 days prior to off-Site transportation of materials.

E. Operating Licenses and Permits:

1. Include letter from each proposed TSDF stating that it is in compliance with its federal, state, and local permits and that permits are current for the duration of the off-Site disposal activities from the Site. Provide letter 7 days prior to commencing transportation of materials from the Site.

2. Include copies of valid operating licenses and permits from each transporter for each proposed transport vehicle/container 7 days prior to entry to the Site.

F. Shipping and Disposal Documents:

1. Include blank sample forms of proposed shipping and disposal documents at least 14 days prior to use.

2. Include complete copies of waste profiles.

3. Include completed copies of shipping and disposal documents including manifests and/or bills of lading on standard approved forms, including a copy of each form signed by the transporter prior to leaving the Site and a copy of each form signed by TSDF accepting the shipment.

4. Use shipping and disposal documents of consignment state where so required. Obtain shipping documents from consignment state 7 days prior to shipment from the Site.

5. Include completed certificates of disposal/destruction/treatment/recycle as applicable and issued by the TSDF following acceptance and final disposition of the shipment.

G. Supplemental Indemnifications: For each TSDF which provides a supplemental indemnification (e.g., Superfund Indemnification), obtain such indemnification for the benefit of TRUST.

H. Weigh Scale Documents:

1. Include calibration certificates for on-Site weigh scales.

2. Include copies of weigh scale tickets on approved forms signed by an authorized weigh scale operator including the following information:

1. Location, date, and time of weighing.

2. Measured weights.

3. Vehicle and container identification.

4. Shipment identification number.

1.5 QUALITY ASSURANCE

A. Perform waste profiling analyses of materials as scheduled for off-Site disposal as required by and to the satisfaction of the operators of TSDFs and federal, state, and local regulations, prior to transport from the Site.

B. Sample and analyze materials scheduled for transportation and off-Site disposal to verify that the type and concentration level of contaminants present lie within acceptable ranges established by the approved wastestream description for each of TSDFs. Perform sampling and analyses of materials as required to the satisfaction of the operators of TSDFs and federal, state, and local regulations, prior to transport from the Site.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Section 01500 - Temporary Facilities and Controls: Requirements for temporary controls.

B. Do not spill, leak, or otherwise release materials from transport vehicles and containers during loading and unloading operations or while in transit from the Site to TSDF.

C. Do not generate dusting conditions when loading bulk solids.

D. Do not generate fume or misting conditions when loading bulk liquids.

E. Clean up any and all spills or leaks in transit.

PART 2 PRODUCTS

2.1 CONTAINERS, PACKING MATERIAL, AND LABELS

A. Comply with DOT, federal, state, and local regulations.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Notify ENGINEER sufficiently in advance of intention to commence activities at the Site that require attendance by ENGINEER as provided hereinafter.

C. Activities requiring attendance by ENGINEER include:

1. Final securement of loaded materials prior to transport from the Site.

2. Decontamination of transport vehicles/containers prior to leaving the Site.

D. Do not cover up loaded material prior to ENGINEER's inspection.

3.2 TSDF SELECTION

A. Provide submittals identifying proposed TSDFs to ENGINEER.

B. TRUST will accept identified TSDFs or request alternate facilities.

3.3 WASTE PROFILING

A. Conduct waste profile sampling and analysis in accordance with the requirements of the operators of TSDFs and federal, state, and local regulations, prior to transport from the Site.

B. ENGINEER may perform sampling and/or analysis to confirm waste profile sampling and analysis. Such sampling and/or analysis or failure to perform such sampling and/or analysis by ENGINEER shall not release or reduce CONTRACTOR's obligation to perform the Works in accordance with the requirements of Contract Documents. Do not remove materials from the Site which have been sampled by ENGINEER and are awaiting analytical results. ENGINEER will receive analytical results within 7 days of ENGINEER's sample collection. ENGINEER will provide copies of ENGINEER's analytical results to CONTRACTOR upon request.

C. Classify materials for off-Site disposal according to wastestream based on waste profile analytical results and other pertinent data/information.

D. Select and submit proposals to ENGINEER for the appropriate disposition of all determined wastestreams to be removed from the Site in accordance with applicable regulations for each wastestream.

E. Submit to ENGINEER completed waste profile for each wastestream. Waste profile will be signed by TRUST or an authorized agent of TRUST except for materials brought on the Site by CONTRACTOR that are not incorporated in the Works or contaminated by performance of the Works.

F. Submit signed waste profiles to TSDFs accepted by TRUST.

3.4 SEGREGATION OF MATERIALS

A. Do not segregate materials for disposal until waste profiles are approved by each TSDF.

B. Segregate and prepare materials for transportation and disposal in accordance with the delivery acceptance requirements of the transporter and TSDF and governing regulations.

3.5 PREPARATION AND SECUREMENT OF TRANSPORT VEHICLES/CONTAINERS

A. Do not load materials for transport for disposal without ENGINEER's approval.

B. Comply with applicable federal, state, and local regulations concerning shipping vehicles, containers, and materials.

C. Visibly display number for each transport vehicle/container.

D. Secure materials in transport vehicles/containers in accordance with regulations governing transportation of materials.

E. Bulk Solid Shipments:

1. Clean the receiving box of the transport vehicle/container of loose debris or foreign material. Line the receiving box or container with a tub liner that is continuous along the bottom and sides. Place the tub liner on the floor, run up the sides, and drape over the sideboards. Neatly push the tub liner into corners to prevent tearing during loading and transport.

2. Load bulk materials into transport vehicles or containers in a manner which will not damage the placed tub liner. Limit the freefall of bulk materials being loaded.

3. Replace damaged tub liner which is incapable of providing containment.

4. Following loading, fold the tub liner over the loaded materials and place an overliner of polyethylene sheeting over the materials prior to securing with an approved tarpaulin in a manner to prevent loss of materials or fugitive dust emissions.

5. ENGINEER will waive the lining requirements where CONTRACTOR can demonstrate, to the satisfaction of ENGINEER, that all of the following conditions are met:

    1. The receiving box or container is of leakproof construction and capable of maintaining a leakproof condition.

    2. The cover to be placed over the receiving box or container is impermeable and will totally enclose the materials within.

    3. The cover to be placed over the receiving box or container will prevent fugitive dust emissions.

    4. The receiving box or container is constructed of materials which can be decontaminated and CONTRACTOR has supplied evidence to the satisfaction of the ENGINEER that arrangements have been made with TSDF to decontaminate the box or container after disposal of materials at TSDF.

F. Drummed/Containerized Shipments:

1. Load and segregate drummed/containerized shipments in accordance with DOT requirements.

2. Place cushioning materials under and around each container for shipments of drummed/containerized materials.

3. Verify that each drum/container is tightly closed.

4. Secure the load to prevent shifting of the load during transport.

3.6 DECONTAMINATION

A. Decontaminate transport vehicles and containers at on-Site equipment decontamination pad after loading and prior to leaving the Site. Remove material on the tires and axles of trucks and material on the vehicle resulting from loading operations.

3.7 DOCUMENTATION FOR THE TRANSPORTATION OF MATERIALS

A. Document the transport and disposal of materials to TSDFs on appropriate state and/or federal manifests or bills of lading as applicable. Prepare, maintain, and provide ENGINEER with copies of manifests, bills of lading, and/or other records for each shipment of materials from the Site. Maintain shipping documents from the time the materials leave the Site to the time of release to TSDFs. Shipping documents for the transportation and disposal of materials will be signed by TRUST or an authorized agent of TRUST, except for materials brought on the Site by CONTRACTOR that are not incorporated in the Works or contaminated by performance of the Works.

3.8 NOTIFICATION

A. Notify applicable federal, state, and local representatives, or authorities having jurisdiction over the route and mode of transport, in advance of commencing transportation.

3.9 TRANSPORTATION

A. Comply with applicable requirements of regulations including, but not limited to 49 CFR 171, 49 CFR 172, 49 CFR 173, and 49 CFR 177.

B. Transport material removed from the Site directly to TSDF approved by TRUST. Do not change either the route or mode of transport after commencing off-Site operations without ENGINEER's prior written approval.

C. Mark and placard shipments in accordance with federal, state, and local regulations as applicable.

D. Employ transport vehicle operators trained in conformance with federal, state, and local regulations applicable to the wastestreams to be transported.

E. Materials shall be transported using vehicles licensed for the wastestream being transported.

3.10 DISPOSAL

A. Make all arrangements with TSDFs for the receipt and acceptance of materials removed from the Site.

B. Ensure that materials removed from the Site are properly prepared and will be accepted by TSDF. Dispose of materials at TSDFs approved by TRUST, which are in compliance with applicable regulations and permitted to receive materials from the Site.

C. Weigh transport vehicles/containers at receiving TSDF weigh scales both before and after discharging their contents.

D. Such measurements will be used by ENGINEER to verify proper delivery of materials which have been removed from the Site and for payment purposes.

E. Return to the Site any transported material delivered to a TSDF which is rejected by the TSDF.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 TRANSPORTATION AND DISPOSAL OF BULK SOLID WASTES

A. Schedule of Prices Item No. 02120/1.

B. Measurement Basis: By the ton calculated from approved weigh tickets generated by TSDF.

C. Payment Basis: Unit price. Includes supply of haul units licensed to haul waste; loading and decontaminating the haul units as required prior to being released from the Site; ensuring units are placarded during transport; transporting to the approved TSDF; fuel costs, licenses, and permitting fees; payment of penalties or fines charged as a result of vehicle overloadings or otherwise; cleaning up spilled waste along haul routes; acceptance and disposal of waste materials by TSDF; all taxes; all disposal costs charged by TSDF; full compliance with applicable federal, state, and local regulations; unloading and decontamination of unloaded transport haul units; weighing each haul unit at the approved TSDF.

4.3 TRANSPORTATION AND DISPOSAL OF DRUMMED/CONTAINERIZED WASTE

A. Schedule of Prices Item No. 02120/2.

B. Measurement Basis: By the 55-gallon drum calculated from approved invoices generated by TSDF.

C. Payment Basis: Unit price. Includes packaging compatible drummed/containerized as required for disposal; supply of haul units licensed to haul waste; loading and decontaminating the haul units as required prior to being released from the Site; ensuring all haul units are placarded during transporting to the approved TSDF; fuel costs, licenses, and permitting fees; payment of penalties or fines charged as a result of vehicle overloadings or otherwise; cleaning up spilled waste along haul routes, acceptance and disposal of waste materials by TSDFs; all taxes; all disposal costs charged by TSDF; full compliance with applicable federal, state, and local regulations; unloading and decontamination of unloaded transport haul units; measuring number of drums at the approved TSDF.

END OF SECTION

SECTION 02200

SITE PREPARATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal and disposal of surface debris.

B. Clearing and grubbing.

C. Extension of existing monitoring wells.

1.2 DEFINITIONS

A. Clearing: Felling, trimming, and cutting of trees into sections and the satisfactory disposal of trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.

B. Grubbing: Removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

1.3 REGULATORY REQUIREMENTS

A. Conform to applicable State of Indiana code for disposal of debris.

B. Coordinate clearing work with utility companies and municipal authorities.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Section 01500 - Temporary Facilities and Controls: Requirements for temporary controls.

B. Control the amount of dust resulting from operations to avoid creation of a nuisance in the surrounding area.

1.5 QUALIFICATIONS

A. Drilling Firm: Company specializing in performing the work of this Section with a driller licensed in the State of Indiana and employed by CONTRACTOR, and having a minimum 5 years experience.

PART 2 PRODUCTS

2.1 RISER

A. ASTM A312/A312M Type 316, stainless steel, 2-inch ID piping with coupled pipe fittings of same standard.

B. ASTM D1785 Schedule 40, PVC, 2-inch ID piping with coupled pipe fittings of same material.

2.2 CEMENT

A. ASTM C150 Type I, Portland cement.

B. Do not use quick setting cement containing additives.

2.3 BENTONITE GROUT

A. Mixture of Volclay or Benseal; ratio of 2.1 pounds of bentonite with 1 US gallon of water to yield a minimum density of 9.4 pounds per US gallon.

2.4 WATER

A. When used in well construction including cleaning, grouting, or other activities, water shall be clean, potable, and obtained from a source supplied by CONTRACTOR.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Verify that existing plant life or other surface features designated to remain are tagged or identified.

3.2 PREPARATION

A. Protect trees, plant growth, utilities, and surface features designated to remain from damage incident to clearing, grubbing, and construction operations by the erection of barriers/fencing or by such other means as circumstances require. For trees, erect barriers/fencing at the drip line.

3.3 CLEARING AND GRUBBING

A. Clear areas required for access to the Site and execution of the Works.

B. Cut off trees, stumps, roots, brush, and other vegetation in areas to be cleared, flush with or below the original ground surface, except such trees and vegetation as directed by ENGINEER to be left standing.

C. Trim trees, designated to be left standing within the cleared areas, of dead branches 1 1/2 inches or more in diameter, and branches to heights directed by ENGINEER.

D. Neatly cut limbs and branches to be trimmed close to the bole of the tree or main branches.

E. Paint cuts more than 1 1/2 inch diameter with an approved tree-wound paint.

F. Remove and dispose of structures that obtrude, encroach upon, or otherwise obstruct work.

G. Remove trees and shrubs within marked areas shown on the Drawings. Remove stumps, main root ball and root system to a depth of 6 inches.

H. When directed by ENGINEER, remove trees and stumps that are designated as trees from areas outside those areas designated for clearing and grubbing; fell such trees, remove their stumps and roots, and dispose of the trees.

I. Clear undergrowth and deadwood, without disturbing subsoil.

J. Remove material to be grubbed, together with logs and other organic or non-organic debris not suitable for reuse, to a depth of not less than 6 inches below the original surface level of the ground in areas shown on the Drawings to be grubbed and in areas shown on the Drawings as construction areas under the Contract.

K. Fill depressions made by grubbing with suitable material soil Type S1 and proof roll to make the surface conform with the original adjacent surface of the ground.

L. Remove debris, rock, and extracted plant life.

M. Dispose of trees, logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations determined by ENGINEER to be uncontaminated into a low-lying area within the landfill footprint. Materials to be spread out over the surface of the landfill.

3.4 EXISTING MONITORING WELL EXTENSIONS

A. Perform extension of 9 (5 stainless steel, 4 PVC) existing monitoring wells in accordance with applicable regulations governing such activities. Activities include:

1. Salvage existing protective casing, remove and dispose of concrete collar to a location designated by ENGINEER within the landfill footprint.

2. Install coupler and seal with stainless steel set screws inserted at 90-degree rotations into the existing well casing and the well casing extension without penetrating the well casing.

3. Backfilling around well casing extension to final cover elevation using bentonite grout.

4. Install concrete collar and protective casing.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 SITE CLEARING

A. Schedule of Prices Item No. 02200/1.

B. Payment Basis: Lump sum price. Includes clearing and grubbing.

4.3 MONITORING WELL EXTENSION

A. Schedule of Prices Item No. 02200/2.

B. Measurement Basis: By the number (each) counted in place.

C. Payment Basis: Unit price. Includes extending monitoring well; installation of additional riser pipe; removing and reuse of existing surface casing; supplying and installing bentonite grout; and preparing and submitting well extension reports.

END OF SECTION

SECTION 02225

WASTE EXCAVATION AND CONSOLIDATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Waste excavation and relocation grading (i.e., grading of the landfill surface).

1.2 DEFINITIONS

A. MSW: Municipal Solid Waste.

B. Unsuitable Material: Topsoil, peat, organic soils, and materials containing slag, cinders, foundry sand, debris, and rubble, or soil with less than required bearing capacity as determined by ENGINEER.

1.3 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Materials Handling Plan (MHP) shall be submitted and approved prior to excavation and transport of any waste materials. At a minimum, the MHP shall include the following:

1. Removal, transport, and placement of waste material.

2. Vehicle requirements and descriptions, driver instructions, decontamination procedures, and emergency procedures.

3. Areas requiring intermediate cover.

4. Approach regarding CDA soil removal.

5. Leachate management during perimeter excavation activities.

6. MHP to include collection of 1 leachate sample prior to waste excavation and relocation. CONTRACTOR to excavate a test pit in the Southeast Excavation Area to a depth of approximately 12 feet below ground surface or to the bottom of the waste. Activity to be coordinated with ENGINEER.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Section 01500 - Temporary Facilities and Controls: Requirements for temporary controls.

B. Control the amount of dust resulting from operations to avoid creation of a nuisance in the surrounding area.

1.5 SEQUENCING AND SCHEDULING

A. Section 01300 - Administrative Requirements: Requirements for coordination.

B. Protect all Site features and existing improvements, such as utilities, monitoring wells, soil gas probes.

C. Coordinate work activities to minimize conflicts and delays. Address the limitation of the number of vehicles that can be staged and operated safely and efficiently on Site.

D. Provide litter control of windblown waste and other materials, utilizing soil cover, wind screens, and/or fencing as necessary.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 PREPARATION OF RELOCATED WASTE SUBGRADE

A. Prior to placement of relocated waste, all subgrade soils shall be proof rolled to identify areas of soft material. Remove soft material and replace with earth fill or structural fill. Deflection of 2 inches or more is considered soft. Remove ice, snow, and frozen material from embankment area prior to beginning placement. Compact subgrade materials utilizing a sheepsfoot compactor. A minimum of 5 passes shall be made over subgrade, before placing first lift.

1. ENGINEER will approve subgrade stability based upon proof-rolling prior to CONTRACTOR'S commencing waste relocation into subject area.

B. Placement of relocated waste shall not proceed when the soil or subgrade are saturated or frozen. Special construction efforts may be required to minimize freezing of soils or to dry saturated soils.

C. Scarify prepared subgrade surface before placement of relocated waste to provide bonding between relocated waste and prepared subgrade.

3.2 WASTE EXCAVATION

A. Prior to any waste transportation, a meeting attended by TRUST, CONTRACTOR, ENGINEER and all personnel involved in waste transport activities will be held at the Site. Meeting will address:

1. Safety and CONTRACTOR's Health and Safety Program.

2. Materials Handling Plan (MHP).

3. ENGINEER's documentation activities.

B. Excavate within proposed grading limits to lines, grades, and elevations shown on the Drawings. Uniformly grade areas to smooth surface, free from irregular surface changes.

1. Provide smooth transition between existing adjacent grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.

C. Excavate waste within the CDA.

1. Waste located up to 6 feet below ground surface within the limits of excavation will be removed and placed onto the landfill.

2. Waste will be excavated in 2-foot intervals to the extent necessary.

3. Post-excavation soil sampling will be conducted after each 2-foot interval by ENGINEER until clean soil has been reached, as demonstrated by the analytical results of the confirmatory soil samples collected, or 6 feet below ground surface, whichever is reached first.

4. Coordinate with ENGINEER regarding soil sampling activities within the CDA. Confirmatory samples will be collected randomly on a 100-foot grid by ENGINEER. Samples will be collected from approximately 13 locations, with a minimum of one sample per property. The collected soil samples will be analyzed for TAL metals, TCL VOCs, and TCL SVOCs.

D. Over-excavate soils below bottom of waste by 6 inches to remove waste residue and unsuitable material.

E. Excavate, load, and transport waste to the on-Site waste disposal area; place, grade, and proof roll to the lines and grades shown on the Drawings and as directed by ENGINEER.

F. Maintain 6 inches of intermediate soil cover or 6-mil polyethylene sheeting over exposed waste areas which shall not receive additional cover for more than 30 days.

3.3 WASTE CONSOLIDATION

A. Excavate, load and transport waste within the landfill limits in order to meet the elevations shown on the Drawings; place, grade and proof roll to the lines and grades indicated in the Drawings and as directed by ENGINEER. Actual waste relocation grades may vary based on the actual volume of excavated waste.

B. CONTRACTOR shall sequence waste relocation across the proposed waste limits to accommodate actual excavated waste quantities. In general, length of 6 percent slope shall be varied and adjusted uniformly across the proposed waste limits to accommodate increased or decreased quantities of relocated waste. Proposed waste limits shall be a set point and shall not vary horizontally.

C. Dispose of unsuitable material off Site or consolidate beneath final cover at the Site in accordance with MHP.

D. Certain items shall not be consolidated within the landfill limits and shall be recycled or disposed of off Site. Segregate the following for separate disposal by TRUST:

1. White goods (e.g., refrigerators, stoves, washers, dryers).

2. Tires.

E. Relocated waste shall be placed and compacted in layers by spreading and leveling material during placement. Spread individual layers to uniform thickness throughout and approximately parallel with finished grade.

F. Place waste materials uniformly in 24-inch (maximum) loose lifts.

G. Compact relocated waste materials utilizing a sheepsfoot compactor. A minimum 5 passes shall be made over placed and graded waste, before placing next lift. Areas showing inconsistent degrees of yielding or rutting shall be recompacted as necessary. Proof rolling and compaction will be observed and approved by ENGINEER.

H. Do not place frozen materials or when surface is frozen.

I. All relocated waste shall be covered with intermediate cover consisting of 6-mil polyethylene sheeting or 6 inches of soil whenever a given area is to remain open for more than 30 days. Polyethylene sheeting shall be anchored adequately to form an effective precipitation barrier and withstand anticipated weather conditions. CONTRACTOR shall be responsible for intermediate and maintenance of such stockpiles and associated sheeting.

J. Conform to appropriate local, state and federal regulations governing transportation and disposal of hazardous, industrial and liquid wastes as specified in this Section.

K. All off-Site transport required for this Project shall occur in leak-proof covered vehicles.

3.4 SITE GRADING

A. Uniformly grade areas to smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide smooth transition between existing adjacent grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.

B. Fill settled areas where excavations or trenches were backfilled and holes made by demolition, removals, testpitting, tree removal, and Site preparation work.

C. Slope grades to direct water away to prevent ponding to required elevations tolerances.

D. Fill in all perimeter waste excavations and grade as specified in this Section to the lines and grades shown on the Drawings. All filling and grading of waste excavations shall be incidental, regardless of actual depth of excavated waste.

E. Compact regraded landfill surface utilizing a sheepsfoot compactor. A minimum 5 passes shall be made over placed and graded waste, before placing next lift. Areas showing inconsistent degrees of yielding or rutting shall be recompacted as necessary. Proof rolling and compaction will be observed and approved by ENGINEER.

3.5 DEWATERING

A. Maintain surface water control and free drainage.

B. Provide pumps, hoses, and other necessary equipment and labor to keep all excavations free of standing water, in all areas.

C. Protect adjacent properties from damage resulting from dewatering operations.

D. Collected water within excavation areas is to be pumped to a low-lying area within the landfill footprint as directed by ENGINEER.

1. Construct depression at low-lying area in location shown on Drawing 2.

2. Depression to have 2H:1V sideslopes with excavated materials placed 5 feet from edge of depression and used as temporary berms around perimeter of depression.

3. Maintain 6 inches of freeboard in depression during leachate recirculation activities. Leachate recirculation is to be done using Best Management Practices consistent with the approved MHP.

4. Location and dimensions to be approved by ENGINEER and shall be based on the type of waste material observed and ability of depression to absorb leachate.

E. CONTRACTOR is responsible for disposal of collected dewatering effluent in conformance with all federal, state, and local requirements.

3.6 DECONTAMINATION

A. CONTRACTOR shall provide for decontamination of transport and other Site vehicles prior to the departure from the Site. Decontamination facility shall be within Site boundaries. Decontamination trucks and trailers shall be included at decontamination facility and include the following minimum steps:

1. Washdown of undercarriage and wheels with high pressure water or steam.

2. Visual inspection for remaining debris. Remove adherent soil by hand-scrubbing if necessary.

3. Final inspection by CONTRACTOR and approval for vehicle to exit the landfill area.

B. Vehicles dripping or leaking liquids shall not be allowed to leave the Site.

3.7 RESTORATION - WITHIN LANDFILL AREA

A. Excavated areas inside the limit of waste generated by waste excavation shall be filled and uniformly graded according to this Section.

B. CONTRACTOR will conduct the following restoration measures:

1. Place rooting zone and topsoil layers and seed areas from which waste is removed within the limit of waste, after acceptance of waste excavation and grading work.

2. Place 6 inches of topsoil and seed for areas on the landfill property but outside the limit of waste.

3.8 RESTORATION - OUTSIDE LANDFILL AREA

A. Excavated areas outside the landfill generated by waste excavation shall be filled and uniformly graded to lines in accordance with the existing topography prior to excavation activities.

B. Conduct the following restoration measures:

1. Place and compact rooting zone soil in 12-inch lifts. A minimum 5 passes shall be made over placed and graded soils, before placing next lift. Areas showing inconsistent degrees of yielding or rutting shall be recompacted as necessary. Compaction will be observed and approved by ENGINEER.

2. Place and grade 6 inches of topsoil. Areas showing inconsistent degrees of yielding or rutting shall be regraded as necessary.

3. Place seed in accordance with Section 02921.

3.10 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspection and testing.

B. Tolerances: Maximum allowable variation from design slopes is 0.5 feet horizontal and 0.1 vertical.

C. Completed waste excavation grades shall be surveyed by CONTRACTOR and approved by ENGINEER before fill placement.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL - EXCAVATION WITHIN LANDFILL AREA

A. Schedule of Prices Item No. 02225/1.

B. Measurement Basis: By the cubic yard measured in place and calculated using surveying methods from measurements of the excavation site taken prior to and following completion of excavation.

A. Payment Basis: Unit price. Includes preparing MHP, excavating, dewatering, transporting materials to within landfill area, grading, restoration within the landfill area, and surveying.

4.2 GENERAL - EXCAVATION OUTSIDE LANDFILL AREA

A. Schedule of Prices Item No. 02225/2.

B. Measurement Basis: By the cubic yard measured in place and calculated using surveying methods from measurements of the excavation site taken prior to and following completion of excavation.

C. Payment Basis: Unit price. Includes preparing MHP, excavating, dewatering, transporting materials to within landfill area, grading, restoration outside the landfill area, and surveying.

4.3 GENERAL - SITE GRADING

A. Schedule of Prices Item No. 02225/3.

B. Measurement Basis: By the cubic yard measured in place and calculated using surveying methods from measurements of the excavation site taken prior to and following completion of site grading.

C. Payment Basis: Unit price. Includes preparing MHP, excavating, grading, compaction, and surveying.

END OF SECTION

SECTION 02318

TRENCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavating trenches for passive ventilation trench.

B. Backfilling and compaction.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. ASTM International (ASTM):

1. C117 - Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.

2. C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

3. D422 - Standard Test Method for Particle-Size Analysis of Soils.

4. D698 - Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

5. D1140 - Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-µm) Sieve.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver, handle, and transport soil or aggregate materials at all times in a manner and with equipment that will prevent intermixing of soil or aggregate types, segregation, or contamination.

C. Minimize stockpiling requirements. Transport material from source directly to final position where possible.

D. Stockpile fill materials on the Site in locations approved by ENGINEER.

1.4 ENVIRONMENTAL REQUIREMENTS

A. Section 01500 - Temporary Facilities and Controls: Requirements for temporary controls.

B. Protect open excavations against damage due to surface runoff and runon. Take necessary precautions to prevent erosion of excavated or disturbed surfaces.

C. Suspend operations whenever climatic conditions, as determined by ENGINEER, are unsatisfactory for placing fill to the requirements of this Section.

D. After occurrence of heavy rains, do not operate equipment on approved excavations until the material has dried sufficiently to prevent occurrence of excessive rutting.

E. Where excavations have been softened or eroded, remove soft and yielding material or otherwise objectionable or damaged areas and replace with fill as specified by ENGINEER.

F. Decontaminate equipment involved in excavation activities which may have come in contact with potentially contaminated material before being removed from the Site or being relocated to clean areas of the Site.

1.5 SEQUENCING AND SCHEDULING

A. Section 01300 - Administrative Requirements: Requirements for coordination.

B. Sequence and schedule excavation activities with work of other Sections.

C. Do not commence excavation operations until the Site-specific Health and Safety Plan has been reviewed by ENGINEER and implemented and decontamination facilities and stockpiling facilities are constructed and operational.

D. Coordinate and sequence excavation operations to minimize the need for temporary stockpiling of excavated materials until required for backfilling. Make every effort to ensure that excavated material designated for backfill is immediately placed as backfill in the Works. Keep the time during which excavations remain open to the practicable minimum.

E. Do not allow or cause any of the work performed or installed to be covered up or enclosed prior to required inspections, tests, or approvals.

PART 2 PRODUCTS

2.1 MATERIALS

A. Fill Type S1: Section 02055.

B. Geotextile Separator: Section 02074, Type G1.

C. Schedule 40 PVC piping as shown on the Drawings.

D. Lockable Plastic Meter Box: Rectangular with dimensions as shown on Drawings.

E. Turbine Ventilator: Grainger Model TV04G or ENGINEER approved equal.

2.2 SOURCE QUALITY CONTROL

A. Section 01400 - Quality Requirements: Requirements for source testing and analysis of fill materials material.

B. If tests indicate materials do not meet specified requirements, change material or material source and retest.

C. Provide fill materials of each type from the same source throughout the Works.

D. In the event of changes to approved sources of materials during the performance of the Works, immediately advise ENGINEER of revised locations and obtain approval of such locations and fill materials prior to use in the Works.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Verify that survey bench marks and intended elevations for the Works are as shown on the Drawings.

C. Do not allow or cause any of the work performed or installed to be covered up or enclosed by work of this Section prior to required inspections, measurements, tests, or approvals.

D. Obtain approval from ENGINEER for completed excavations and previously placed material prior to placement of successive lifts.

E. Obtain approval from ENGINEER prior to placing fill against structures or around exposed buried utilities.

F. Do not proceed with backfilling operations within a specific excavation area until the excavation area is approved as complete by ENGINEER. Do not cause excavations to be backfilled until ENGINEER has approved excavation as complete and completed field measurements for payment purposes, and sampling and testing for analytical purposes.

G. Ensure areas to be backfilled are free from debris snow, ice, water, or frozen ground.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain from damage.

C. Protect plant life, lawns, and other features remaining as a portion of final landscaping.

D. Protect bench marks, survey control points, existing structures, from excavating equipment and vehicular traffic.

E. Maintain and protect above and below grade utilities which are to remain.

F. Maintain and protect from damage wells, utilities, and structures encountered, and not designated for demolition or removal including buildings and building foundations. In the event of disturbance of or damage to any utility or structure, immediately notify ENGINEER. Repair or replace any well, utility, or structure damaged by CONTRACTOR operations unless specified for demolition or removal.

G. Protect trenches from contamination and surface water runoff.

H. Obtain direction from ENGINEER before moving or otherwise disturbing utilities or structures.

I. Remove surface features or obstructions including, but not necessarily limited to trees, shrubs, bush, and other vegetation from surfaces to be excavated, within the limits shown on the Drawings or as required to construct the finished work. Dispose of such obstructions to an on-Site spoil area as directed by ENGINEER.

3.3 TRENCHING

A. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with the Works.

B. The banks of trenches at bottom, within limits of pipe bedding and pipe cover, shall be as nearly vertical as practicable.

C. In no case during performance of the Works shall trenching advance more than 200 feet ahead of active installation. Do not leave trenches open more than 200 feet at end of day's operation.

D. Accurately excavate and grade the bottom of trenches to provide uniform bearing and support for each section of pipe on full thickness of approved bedding material at every point along its entire length.

E. Remove lumped soil, boulders, and rock up to 1 cu yd, measured by volume.

F. Hand trim, make firm, and remove loose material and debris from trenches. Where natural or fill material at bottom of excavation is disturbed, compact disturbed soil with backhoe or remove disturbed soil and refill the space as directed by ENGINEER.

G. Open trenches shall be CONTRACTOR's sole responsibility.

H. Remove excavated material to location within the landfill footprint prior to placement of protective soil cover.

I. Dispose of excavated material not approved by ENGINEER for use as fill in the Works including boulders, debris, brush, roots, or other perishable matter, off the Site.

J. Barricade any excavation left open overnight.

3.4 OVER-EXCAVATING

A. Notify ENGINEER when soil at bottom of the excavation appears unsuitable and proceed as directed by ENGINEER. Where, in ENGINEER's opinion, the undisturbed condition of the soils is inadequate for the support of installations, over-excavate to adequate supporting soils as directed by ENGINEER and refill the excavated space with approved material to the proper elevation in accordance with procedure specified for backfill. Where so directed by ENGINEER and except as otherwise specified, the excavation and removal of inadequate material as specified, supply and installation of such material in excess of quantities shown on the Drawings will be paid for under the Schedule of Unit Prices. Use such over-excavated material in the Works or stockpile on the Site as approved by ENGINEER.

B. Should unauthorized excavation be carried below the lines and grades shown on the Drawings and in excess of the specified depth and tolerance because of CONTRACTOR's operations including errors, methods of construction, or to suit his convenience, correct unauthorized excavation as follows:

1. Fill unauthorized over-excavation areas by backfilling over-excavated soil and compacting to the satisfaction of the ENGINEER.

C. Additional excavation to remove weakened or disturbed soil caused by unsuitable construction methods or procedures or to suit CONTRACTOR's convenience and subsequent additional backfill and compaction to correct deficiencies shall be at no additional cost to TRUST.

3.5 PROTECTING CLEAN SOIL FROM CONTAMINATION

A. Notify ENGINEER when soil at the bottom of the excavation appears contaminated and proceed as directed by ENGINEER.

B. Place plastic sheeting and plywood under excavation equipment and alongside the excavation to prevent contaminated soil from being mixed with surrounding clean surficial soil. Use other means of preventing contamination subject to approval by ENGINEER. Do not mix overburden soil with bedding materials unless otherwise directed by ENGINEER. Place overburden soil adjacent to excavation in compliance with OSHA requirements, as applicable, and as directed by ENGINEER.

C. Load contaminated soil and materials directly into transport vehicles/containers for placement within the landfill footprint. ENGINEER may direct overburden soil to be handled as contaminated material. Clean stockpiled overburden soils will be considered native fill for the purpose of backfilling.

D. Prevent cross-contamination of clean overburden during excavation. Decontaminate excavation equipment after handling contaminated materials and prior to handling clean overburden. ENGINEER will direct additional decontamination as necessary in the opinion of ENGINEER.

3.6 BACKFILLING

A. Backfill trenches to contours and elevations with unfrozen fill materials.

B. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

C. Aggregate Type A1: Place aggregate 2 feet below the groundwater level in equal continuous layers not exceeding 12 inches.

D. Aggregate Type A1: Place aggregate 2 feet above the groundwater level in equal continuous layers not exceeding 12 inches.

E. Place Schedule 40 PVC piping on aggregate backfill Type A1 at elevation 2 feet above groundwater table.

F. Aggregate Fill Type A1: Place aggregate to 1 foot below the existing topography in continuous layers not exceeding 8 inches.

G. Place nonwoven geotextile separator Type G1 on top of aggregate backfill.

H. Soil Type S1: Place material in equal continuous layers not exceeding 6 inches depth.

I. Seed in accordance with Section 02921.

3.7 COMPACTION

A. Compact backfill material to avoid soft spots and to satisfaction of ENGINEER.

3.8 TEMPORARY STOCKPILING

A. Obtain ENGINEER's approval for locations of temporary stockpiles. Obtain ENGINEER's approval prior to placing material in such stockpiles.

B. Stockpile materials on the Site at locations shown on the Drawings or as designated by ENGINEER.

C. Construct stockpile sites so that they are level, well drained, free of foreign materials, and of adequate bearing capacity to support the weight of materials to be placed thereon.

D. Provide and maintain access to stockpiles.

E. Separate differing materials with substantial dividers or stockpile apart to prevent mixing.

F. Prevent intermixing of soil types or contamination or segregation.

G. Direct surface water away from stockpile sites to prevent erosion or deterioration of materials.

H. Maintain temporary stockpile slopes not steeper than 2 horizontal to 1 vertical. In no instance shall stockpiles be greater than 15 feet in height above original surrounding grade. Place hay bales or other soil erosion and sediment control fencing at the base of and around each temporary stockpile to contain soil that may be washed off the stockpile.

I. Maintain area surrounding stockpiles in neat and tidy condition.

J. Cover stockpiled material with approved reinforced polyethylene sheeting of minimum 6-mil thickness to withstand adverse weather, wind, and other detrimental forces. Provide total protection of stockpiled material from rain and other adverse weather effects.

3.9 TOLERANCES

A. Trench Depth: Plus or minus 0.5 foot.

B. Trench Width: Plus or minus 1 foot from required width.

C. Top Surface of Backfilling: Plus or minus 0.10 feet from required elevations.

D. Top Surface of General Backfilling: Plus or minus 0.10 feet from required elevations.

3.10 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspection and testing.

B. Testing by ENGINEER:

1. ENGINEER may select samples of uncompacted fill intended for the Works and samples of compacted fill in the Works.

2. ENGINEER will perform tests in the field and in the laboratory on samples of backfill and imported fill to determine if materials meet specification at frequency and methods specified in this Article 3.10.

3. Testing by ENGINEER will in no way relieve CONTRACTOR of his responsibility to test all material prior to notifying ENGINEER of materials' suitability for the work involved.

C. Methods of Testing by ENGINEER: Particle size analysis will be performed in accordance with ASTM D422, or ASTM D1140, or ASTM C117 and ASTM C136, whichever is appropriate to material being tested.

D. Frequency of Testing by ENGINEER: At least 1 particle size analysis will be made for each 5,000 cu yd of fill and for any change in materials being used in the backfill.

E. Failure to Meet Specified Requirements: If tests indicate that material specifications have not been achieved or cannot be obtained with equipment in use, procedure being followed, or material being incorporated, remove and replace work and modify operations so that the equipment, procedures, and materials will produce the required results. Additional testing required by ENGINEER will be at no additional cost to TRUST.

3.11 PROTECTION OF FINISHED WORK

A. Section 01700 - Execution Requirements: Requirements for protecting installed work.

B. Reshape and recompact fills subjected to vehicular traffic during construction.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 TRENCHING

A. Schedule of Prices Item No. 02381/1.

B. Measurement Basis: By the linear foot measured in place using surveying methods prior to and following completion of excavation.

C. Payment Basis: Unit price. Includes excavating to required elevations, loading, and placing materials at location within landfill.

4.3 PVC PIPING AND FIXTURES

A. Schedule of Prices Item No. 02381/2.

B. Measurement Basis: By the linear foot measured in place prior to backfilling and following completion of trenching.

C. Payment Basis: Unit price. Includes supplying and placing piping material and fixtures including lockable plastic vault, sampling ports, and wind turbines.

END OF SECTION

SECTION 02524

SOIL GAS PROBES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Abandonment of existing soil gas probes.

B. Drilling and installation of 15 soil gas probes.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. ASTM International (ASTM): D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

C. Department of Transportation (DOT).

D. Indiana Administrative Code (IAC): Section 312 IAC 13-10-2 regarding permanent abandonment of wells.

1.3 SYSTEM DESCRIPTION

A. Soil gas probes with the following characteristics:

1. Borehole: 3 1/4-inch diameter.

1.4 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Product Data: Include data indicating rated capacities, weights, accessories.

C. Samples: Should the source of any materials to be used downhole change, submit a sample of new material for analysis; such submissions shall be in addition to any submission required to be submitted to other authorities having jurisdiction.

D. Evidence of Qualifications: Submit proof of state license to perform the work of this Section.

E. Manufacturer's Instructions: Indicate rigging, assembly, and installation instructions.

1.5 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution Requirements: Requirements for closeout submittals.

B. Record Documents: Accurately record actual locations of soil gas probes, depth, subsoil strata, and drilling difficulties encountered. Submit signed copy of driller's log book statements.

1.6 QUALITY ASSURANCE

A. Because of the nature of the activities which have taken place at the Site, the soil gas probes may penetrate potentially contaminated soil. Take necessary precautionary measures to prevent contamination near the ground surface from being carried downhole.

B. Procure permits, certificates, and licenses required by law for the execution of the Works. Request and obtain waivers from the authorities having jurisdiction and submit to ENGINEER prior to the commencement of work at the Site. Comply with federal, state, and local Laws and Regulations relating to the performance of the Works.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum 5 years experience.

B. Drilling Firm: Company specializing in performing the work of this Section with a driller licensed in the State of Indiana and employed by CONTRACTOR, and having a minimum 5 years experience; including the abandonment of soil gas probes.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01500 - Temporary Facilities and Controls: Requirements for temporary controls.

B. Shut off and seal a hole should flowing artesian water or gas be encountered.

C. Take necessary precautions to ensure subsurface soils and water which could impact the integrity of the Site are not released.

D. Remediate any release of potentially contaminated material and restore the area to preconstruction conditions using clean imported materials.

1.9 SEQUENCING AND SCHEDULING

A. Section 01300 - Administrative Requirements: Requirements for coordination.

B. Sequence and schedule the work subject to the following conditions:

1. ENGINEER will determine location and sequence of drilling events.

2. Strictly enforce equipment cleaning.

3. Complete drilling and installation activities at each soil gas probe in its entirety, except where surface casing is to set for a minimum of 24 hours, before moving to a subsequent soil gas probe.

PART 2 PRODUCTS

2.1 RISER

A. ASTM D1785 Schedule 40, PVC, ½- inch ID, threaded, and flush coupled.

2.2 PERFORATED PVC SCREEN

A. ASTM D1785 Schedule 40, PVC, 1/2-inch ID; 4-foot screen length and 1/2-inch perforated openings, threaded and flush coupled joints.

2.3 CLEAR STONE

A. Inert uniformly graded 3/8-inch clear stone, well rounded and free of fines.

2.4 CONCRETE

A. ASTM C39/C39M.

B. Pre-mix concrete mixed to manufacturer's specifications with potable water.

C. Compressive Strength: Minimum 3,000 psi at 28 days.

2.5 BENTONITE CHIPS

A. Chipped sodium montmorillonite furnished in sacks or buckets, free of impurities, from a commercial source.

B. Diameter: Less than 1/5 the width of the annular space into which they are placed.

2.6 WATER

A. When used in equipment decontamination, drilling, and soil gas probe construction including cleaning, grouting, or other activities, water shall be clean, potable, and obtained from a source supplied by CONTRACTOR.

2.7 DRUMS

A. DOT-approved 55-US gallon steel drums attached with steel lid.

2.8 POLYETHYLENE SHEETING

A. Continuous sheeting of minimum 6-mil thickness fabricated from a single ply of construction grade high-density polyethylene plastic.

2.9 PROTECTIVE SURFACE CASING

A. ASTM A53/A53M Schedule 40, carbon steel, 4-inch ID surface casing and a lockable cap welded to a hinge with the hasp welded directly to the side of the surface cavity.

2.10 OTHER MATERIALS

A. Selected by CONTRACTOR for the purpose intended and subject to ENGINEER's approval prior to use.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Verify that the Site conditions will support equipment for performing drilling operations.

C. Do not commence drilling operations until ENGINEER has located and marked the location of each gas probe; proceed with installation of probes only upon receipt of written instructions from ENGINEER.

D. Obtain ENGINEER's approval for any material introduced into borehole.

3.2 EXISTING SOIL GAS PROBE ABANDONMENT

A. Perform abandonment of 7 existing soil gas probes in accordance with applicable regulations governing such activities (312 IAC 13-10-2). Complete and submit necessary applications and reports of abandonment activity to the appropriate authorities. Submit these applications and reports to ENGINEER for review prior to submittal to the authorities. Activities include:

1. Injecting pure bentonite grout into perforated interval using a tremie pipe until undiluted grout returns to the top of riser pipe. Repeat for each riser pipe/probe.

2. Excavate and remove the aboveground protective casing and protective concrete collar.

3. Cut off 1/2-inch diameter riser pipe approximately 2 feet below ground surface.

4. Cement plug the remaining larger in diameter than the borehole to the ground surface.

B. Complete gas probe closure logs for each abandoned gas probe and submit to ENGINEER for review prior to submittal to authorities.

C. Clean equipment after abandonment of each gas probe as specified in Article 3.3 before moving to the next gas probe. Clean equipment before leaving Site or traveling on clean areas of Site.

3.3 PREPARATION

A. Protect structures near soil gas probe from damage.

B. Prior to commencing drilling at each probe location, protect surface soil in the immediate area of drill rig with 2 layers of polyethylene sheeting covered by 5/8-inch plywood.

1. Minimum Area to be Covered: Approximately 12 feet by 16 feet; contain drill cuttings on top of the plywood prior to transfer to drums.

C. Equipment Cleaning:

1. Upon mobilization to the Site and prior to commencing drilling, take drill rig and associated equipment to the designated on-Site Equipment Decontamination Facility and thoroughly clean with a high-pressure, low-volume, hot water wash to remove mud and other foreign matter; ensure drill rig and associated equipment are free of mud and hydraulic fluid, seals and gaskets are intact, and no fluids are leaking. Remove loose paint or encrustation from downhole equipment prior to use; remove by sandblasting prior to mobilization to the Site.

2. Take downhole equipment used in the completion of soil borings and installation of probe to the designated on-Site Equipment Decontamination Facility and clean as specified herein prior to commencing each borehole to prevent cross-contamination from the previous drilling location.

3. Clean drill rig prior to mobilizing to each probe location.

4. Equipment cleaning as specified herein is in addition to requirements of Section 01500.

D. Methods of Cleaning:

1. Clean downhole drilling equipment such as push rods, drill steel, and associated equipment and tools that will contact potentially contaminated soil with clean, hot water under high pressure using the following wash sequence:

1. Wash and wipe dry.

2. Rinse.

2. Clean riser and screens thoroughly using the following wash sequence:

1. Wash equipment thoroughly with a detergent (Alconox) high-pressure wash to remove particulate matter or surface film (if any).

2. Rinse with potable water.

3. Protect from contact with debris, until required.

3.4 DRILLING AND INSTALLATION

A. Use drilling equipment and methods approved by ENGINEER.

B. Construct each soil gas probe in accordance with the details as shown on the Drawings and as directed by ENGINEER.

C. Maintain soil gas probe opening and casing free of contaminating materials.

D. Advance push rods to ensure a minimum 3 1/4-inch diameter borehole. Advance borehole to elevation shown on the Drawings. Obtain split-spoon samples at 5-foot intervals.

E. If auger refusal is encountered, ENGINEER will mark the relocation of the soil gas probe.

F. Attach perforated PVC screen, complete with bottom plug, to the soil gas probe riser pipe by threaded flush joint couplers and lower to desired screened interval specified by ENGINEER. Take precautions to prevent damage to threaded joints during installation.

G. Extend the riser pipe a minimum of 4 feet above grade temporarily to deter entrance of foreign materials during soil gas probe completion.

H. Place suitably graded clear stone in annulus between riser pipe and borehole by using a decontaminated, flush-threaded , 3/4-inch diameter tremie pipe to a height of 1 vertical foot above top of screen.

I. Install a bentonite chip seal to a height of 1 vertical foot above the clear stone using a 3/4-inch tremie pipe to ensure that a good seal is formed. Lower the tremie pipe to the top of the clear stone and slowly raise tremie pipe as the bentonite chips fill the annular space.

J. Add potable water and allow sufficient time for bentonite seal to hydrate prior to grouting the remaining annulus.

K. Fill the remainder of borehole with pure bentonite grout by the tremie method or other approved method until undiluted grout returns to the soil gas probe casing surface. Place grout in one continuous operation with entire amount placed before initial set occurs. Remove uppermost 0.5 feet of bentonite grout and replace with cement-bentonite grout.

L. Perforated PVC Screens:

1. Clean screens prior to installation in accordance with Article 3.2.

2. Install screens by methods approved by ENGINEER and in accordance with manufacturer's recommendations.

M. Riser Pipe:

1. Clean riser pipe and fittings prior to installation in accordance with Article 3.2.

2. Install riser pipe to sizes and depths shown on the Drawings and in locations designated by ENGINEER. Provide a nominal riser pipe stickup above ground of 4 feet for each soil gas probe.

3. Maintain accurate records of riser pipe lengths and sizes installed.

N. Protective Surface Casing:

1. Clean protective surface casing and fittings prior to installation in accordance with subparagraph 3.3 D.2.

2. Install casing to sizes and depths shown on the Drawings and in locations designated by ENGINEER. Provide a nominal casing stickup above ground of 4.25 feet.

3. Maintain accurate records of casing lengths and sizes installed.

O. Concrete:

1. Use concrete to form a 2-foot by 2-foot by 1-foot thick concrete collar flush with ground surface around the protective casing at ground surface. Construct concrete collar top surface to promote surface drainage away from gas probe.

2. Mix and place concrete by hand in one continuous operation with the entire amount poured before initial set occurs.

P. Restore the surface to original condition or as approved by ENGINEER.

3.5 SOIL GAS PROBE ABANDONMENT

A. In the event of probe abandonment because of loss of tools or equipment, or due to CONTRACTOR negligence, if requested and as directed by ENGINEER, fill the abandoned hole with bentonite chips; if directed by ENGINEER, salvage and remove such casing as can be salvaged.

B. Abandonment of a borehole due to refusal and not due to CONTRACTOR equipment loss, equipment failure, or negligence, which is beyond the CONTRACTOR's control, will be reimbursed at the appropriate Contract rates.

3.6 WASTE HANDLING

A. Collect cuttings and solid waste generated during equipment cleaning and probe construction, and place in drums.

B. Collect liquid wastes generated during equipment cleaning, probe construction, and transfer to wastewater storage drums.

3.7 PROTECTION OF FINISHED WORK

A. Section 01700 - Execution Requirements: Requirements for protecting installed work.

B. Protect completed soil gas probes under construction from contamination.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 SOIL GAS PROBE ABANDONMENT

A. Schedule of Prices Item No. 02524/1.

B. Measurement Basis: By the number (each) counted in place.

C. Payment Basis: Unit price. Includes supply and installation of bentonite and cement-bentonite grouts; removal of surface casing and protective concrete collar; cutting off risers 2 feet below ground surface; obtaining all permits and filing all required reports.

4.3 3 1/4 -INCH ID PUSH ROD INSTALLATION WITH SOIL SAMPLING

A. Schedule of Prices Item No. 02524/2.

B. Measurement Basis: By the vertical foot measured in place from existing ground surface to the approved bottom of borehole.

C. Payment Basis: Unit price. Includes drilling 3 1/4-inch diameter boreholes; soil sampling at 5-foot intervals; collecting and spreading cuttings and solids over designated area and liquid wastes into wastewater storage tanks; equipment cleaning; and mobilization between soil gas probes.

4.4 PERFORATED PVC SCREEN

A. Schedule of Prices Item No. 02524/3.

B. Measurement Basis: By the vertical foot of perforated screen measured prior to being installed in the borehole.

C. Payment Basis: Unit price. Includes 1/2-inch diameter PVC perforated screens complete with threads and bottom cap; cleaning screen prior to installation; and suitably graded clear stone around and above perforated screen.

4.5 RISER PIPE

A. Schedule of Prices Item No. 02524/4.

B. Measurement Basis: By the vertical foot measured in place from the top of the riser to the top of the screen.

C. Payment Basis: Unit price. Includes riser pipe complete with threaded and coupled joints; cleaning riser pipe prior to installation in borehole; and surface fittings.

4.6 4-INCH DIAMETER PROTECTIVE SURFACE CASING

A. Schedule of Prices Item No. 02524/5.

B. Measurement Basis: By the number (each) counted in place.

C. Payment Basis: Unit price. Includes supplying and installing vented protective surface casing with lockable cap mechanism; embedding protective casing in concrete.

4.7 CONCRETE COLLAR

A. Schedule of Prices Item No. 02524/6.

B. Measurement Basis: By the number (each) counted in place.

C. Payment Basis: Unit price. Includes supplying and installing concrete collar measuring 2 feet by 2 feet by 1 feet thick; supplying and installing concrete around riser pipe from 1 foot below ground to ground surface.

4.8 LOSS OF TOOLS OR EQUIPMENT

A. In the event of loss of tools or equipment during any phase of constructing a soil gas probe or soil boring, no additional payment for time spent or expense incurred in an attempt to fish out or recover tools or equipment prior to possible abandonment of a soil gas probe will be made.

END OF SECTION

SECTION 02610

PIPE CULVERTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Corrugated steel pipe culvert, joints, and accessories.

B. Bedding and slope protection at pipe end.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. ASTM International (ASTM):

1. A760/A760M - Standard Specification for Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains.

2. A924/A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

3. A929/A929M - Standard Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe.

1.3 DEFINITIONS

A. SMDD: Standard Maximum Dry Density and in the context of this Contract means the maximum dry unit weight determined in accordance with ASTM D698.

1.4 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Product Data: Include for pipe, fittings, and accessories.

C. Manufacturer's Instructions: Indicate special procedures required to install products specified.

1.5 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution Requirements: Requirements for closeout submittals.

B. Record Documents: Indicate actual locations of pipe runs, connections, and invert elevations.

1.6 REGULATORY REQUIREMENTS

A. Conform to applicable State of Indiana code for materials and installation of work of this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver, store, and handle pipe in accordance with applicable requirements of specified references, manufacturer's instructions, and as specified herein.

C. Use every precaution to prevent damage to the pipe. Do not permit metal tools or heavy objects to unnecessarily come in contact with the pipe.

PART 2 PRODUCTS

2.1 STEEL CULVERT PIPE

A. Corrugated Steel Pipe: ASTM A760/A760M, Galvanized.

1. Helical lock seam.

2. Shape: Circular with a nominal diameter of 36 inches.

3. Sheet Stock: Steel.

B. Tapered Ends: Same material as pipe, machine cut, for joining to pipe end.

C. Coupling Bands: Galvanized steel, 0.052 inches thick by 10 inches wide; connected with neoprene O-ring gaskets and galvanized steel bolts.

2.2 BEDDING AND COVER MATERIALS

A. Bedding: Section 02060, Aggregate Type A4.

B. Cover: Section 02060, Aggregate Type A4.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Verify that base is ready to receive work and excavations, dimensions, and elevations are as shown on the Drawings.

3.2 PREPARATION

A. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 BEDDING

A. Excavate culvert trench to 12 inches below pipe invert, in accordance with Section 02318. Hand trim excavation for accurate placement of pipe to elevations shown on the Drawings.

B. Place bedding material at trench bottom, level fill materials in 1 continuous layer, not exceeding 6 inches compacted depth; compact to 95 percent SMDD.

C. Backfill around sides and to top of pipe with fill, tamped in place and compacted to 95 percent SMDD.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

3.4 INSTALLATION - PIPE

A. Install pipe and accessories in accordance with manufacturer's instructions.

B. Install pipe to alignment and slope gradients shown on the Drawings.

C. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.

D. Shore pipe to required position; retain in place until after compaction of adjacent fills. Ensure pipe remains in correct position and to required slope.

E. Install aggregate at sides and over top of pipe.

F. Install culvert end gratings.

G. Perform trench excavation and backfilling in accordance with Section 02318. Do not displace or damage pipe when compacting.

3.5 PIPE ENDS

A. Place fill at pipe ends, as shown on the Drawings.

3.6 TOLERANCES

A. Maximum Variation from Intended Elevation of Culvert Invert: 1/2 inch.

B. Maximum Offset of Pipe from True Horizontal Alignment: 1 inch.

3.7 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspection and testing.

B. Request inspection prior to and immediately after placing aggregate cover over pipe.

C. Compaction testing will be performed in accordance with ASTM D698.

D. If tests indicate the Works does not meet specified requirements, remove the Works, replace, and retest.

E. Frequency of Tests: 1 per lift per 50 feet of pipe length.

3.8 PROTECTION OF FINISHED WORK

A. Section 01700 - Execution Requirements: Requirements for protecting installed work.

B. Protect pipe and bedding from damage or displacement until backfilling operation is in progress.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 PIPE CULVERT

A. Schedule of Prices Item No. 02610/1.

B. Measurement Basis: By the total linear invert length of pipe.

C. Payment Basis: Unit price. Includes excavating; removing unsuitable subsoil, bedding, backfilling, compacting; and pipe and fittings assembled.

END OF SECTION

SECTION 02821

CHAIN LINK FENCES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal of existing fencing.

B. Salvaging existing fence for reinstallation.

C. Fence framework, fabric, and accessories.

D. Excavation for post bases; concrete foundation for posts.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. ASTM International (ASTM):

1. A116 - Standard Specification for Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric.

2. A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

3. A780 - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

4. F567 - Standard Practice for Installation of Chain-Link Fence.

5. F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

1.3 DEFINITIONS

A. Fence Post: An upright tubular or fabricated steel member for supporting fencing material.

B. Line Posts: Fence posts spaced at regular intervals between terminal posts throughout each stretch of fence.

C. Terminal Posts: Fence posts which include end, gate, corner, and straining posts.

D. End Posts: Fence posts positioned at the ends of a stretch of fence.

E. Corner Posts: Fence posts positioned at corners and changes of direction greater than 10 degrees.

F. Straining Posts: Fence posts positioned at changes in grade greater than 30 degrees.

G. Top Rail: Tubular or fabricated steel section continuously joined by means of sleeves or couplings throughout each stretch of fence extending between terminal posts.

H. Brace Rail: Tubular or fabricated steel section used for bracing terminal posts.

I. Diagonal Brace Wire: Wire used for bracing terminal posts.

J. Top Wire: Wire installed at top of fence and extending throughout each stretch of fence between terminal posts.

K. Bottom Wire: Wire installed at bottom of fence and extending throughout each stretch of fence between terminal posts.

L. Fittings: Mechanical connections of various designs, shapes, and metals to join fence components into an integral structure.

M. Wire Ties: Wire used to tie chain link fence fabric to line posts, bottom wires, and top rails or top wires.

N. Knuckled: Type of selvage obtained by interlocking adjacent wire ends, in pairs, and then bending the wire ends back into a closed loop.

O. Barbed: Tye type of selvage obtained by interlocking adjacent wire ends, in pairs, and then twisting the wire at least 2 turns with the wire ends above the twist.

1.4 SYSTEM DESCRIPTION

A. Fence Height: 8 feet nominal as shown on the Drawings.

B. Line Post Spacing: At intervals not exceeding 10 feet.

1.5 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Product Data: Include for fabric, posts, accessories, fittings, and hardware.

1.6 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution Requirements: Requirements for closeout submittals.

B. Record Documents: Accurately record actual locations of property perimeter posts relative to property lines.

1.7 QUALITY ASSURANCE

A. Perform work of this Section in accordance with the manufacturer's instructions.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver chain link fence fabric in firmly tied tight rolls.

C. Tag each roll clearly indicating class of coating, specified wire size, mesh size, height of fabric, ASTM A392 and ASTM F668 designation, and manufacturer's name.

D. Store and handle materials in accordance with manufacturer's instructions. In the event of damage, make repairs or replacements approved by ENGINEER.

E. Protect coated surfaces from damage and protect fencing materials from distortion or bending.

F. Repair damaged zinc-coated surfaces as specified.

1.9 SEQUENCING AND SCHEDULING

A. Section 01300 - Administrative Requirements: Requirements for coordination.

B. Do not commence fence installation until grading work is complete and installation will not interfere with other planned work in the area.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Farm "N" Garden, Inc., Kalamazoo, Michigan; 96-inch, 9 gage, galvanized, 2-inch chain link fabric.

2.2 MATERIALS

A. Framing (Steel): Hot rolled steel strip, cold formed to pipe configuration, longitudinally welded construction, minimum yield strength of 50 ksi; coating conforming to ASTM F1043 on pipe exterior and interior.

B. Fabric Wire (Steel): ASTM A116, Galvanized wire.

C. Concrete: Portland cement, 3,000 psi strength at 28 days, 3-inch slump; 3/4-inch nominal sized coarse aggregate.

2.3 COMPONENTS

A. Line Posts: 2 1.2- inch outside diameter.

B. Corner and Terminal Posts: 3-inch outside diameter.

C. Top and Brace Rail: 1 5/8-inch outside diameter, plain end, top rail sleeve coupled.

D. Fabric: 2-inch diamond mesh interwoven wire, 9 gage, knuckle selvage.

E. Tension Wire: 7 gage coil spring aluminum.

F. Tie Wire: 9 gage aluminum alloy steel wire.

2.4 ACCESSORIES

A. Caps: Aluminum alloy dome; sized to post diameter, set screw retainer.

B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

2.5 FINISHING

A. Components and Fabric: Galvanized, 2.27 pounds per sq ft coating for top rail, 3.65 pounds per foot for line posts, 5.79 pounds per foot for terminal posts.

B. Accessories: Same finish as components and fabric.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Verify that surfaces and the Site conditions are ready to receive work.

3.2 PREPARATION

A. Remove debris and correct ground undulations along fence lines to obtain a smooth uniform gradient between posts.

B. Maintain security of the Site during removal of existing fences and installation of new fence and gate(s).

C. Maximize salvation efforts of existing fence for reuse.

3.3 EXISTING FENCE REMOVAL

A. Remove section of existing fence, including posts and footings, in location as identified on the Drawings.

B. Dispose of fencing, posts, and footings in accordance with Section 02120.

C. Fill voids left from footing removal with soil Type S1. Hand tamp material until backfill is to existing ground surface without yielding or rutting; recompacted as necessary.

3.4 INSTALLATION

A. Install framework, and fabric in accordance with manufacturer's instructions.

B. Place fabric on the outside of posts and rails.

C. Set intermediate and terminal posts plumb in concrete footings with top of footing 2 inches above finish grade. Slope top of concrete for water runoff.

D. Line Post Footing Depth Below Finish Grade: 3 1/2 feet.

E. Corner and Terminal Post Footing Depth Below Finish Grade: 3 1/2 feet.

F. Brace each corner post to adjacent line post with horizontal center brace. Install brace rail 1 bay from end and gate posts.

G. Provide top rail through line post tops and splice with 6-inch long rail sleeves.

H. Do not stretch fabric until concrete foundation has cured 28 days.

I. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

J. Position bottom of fabric 2 inches above finished grade.

K. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

L. Attach fabric to end and corner posts with tension bars and tension bar clips.

M. Install bottom tension wire stretched taut between terminal posts.

N. Install corner posts where change in alignment exceeds 10 degrees horizontally.

O. Strengthening of Existing Fence:

1. Strengthen existing fences by means of supply and installation of additional posts, braces, tension wires, rails, and fabric in order to restore existing fencing to fully serviceable condition.

2. Following the installation of additional posts, and allowing for 14 days concrete curing time, re-tension existing fence fabric, and add as required additional braces, tension wires, and rails.

3. Dispose of surplus fabric.

4. Install additional fabric, if required, by weaving 1 fabric wire vertically to connect to existing fences at all connection points.

3.5 TOLERANCES

A. Maximum Variation from Plumb: 1/4 inch.

B. Maximum Offset from True Position: 1 inch.

C. Components shall not infringe adjacent property lines.

3.6 FIELD QUALITY CONTROL

A. Section 01400 - Quality Requirements: Field inspection and testing.

B. Repair damaged galvanized surfaces in accordance with ASTM A780.

C. Apply field repair coating to damaged galvanized surfaces at dry film thickness at least equal to specified galvanized coating thicknesses.

3.7 CLEANING

A. Section 01700 - Execution Requirements: Requirements for cleaning installed work.

B. Spread soil excavated from post holes uniformly within landfill footprint under final cover area.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 EXISTING FENCING - REMOVAL AND DISPOSAL

A. Schedule of Prices Item No. 02120/1.

4.3 EXISTING FENCING - BACKFILLING

A. Schedule of Prices Item No. 02821/1.

B. Measurement Basis: By the number (each) of footing locations counted in place.

C. Payment Basis: Unit price. Includes supply and installation of soil Type S1; hand placement and compaction.

4.4 EXISTING FENCING - REINSTALLATION

A. Schedule of Prices Item No. 02821/2.

B. Measurement Basis: By the linear foot measured in place along centerline of fence, continuous through posts.

C. Payment Basis: Unit price. Includes reinstallation of fencing and replacing damaged, missing, or defective material previously stockpiled; excavation of new post holes; and supply and installation of concrete.

END OF SECTION

SECTION 02921

SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Preparation of subgrade.

B. Seeding.

C. Mulching and fertilizing.

D. Installation of erosion control blanket.

E. Maintenance for seed establishment.

1.2 REFERENCES

A. Section 01400 - Quality Requirements: Requirements for references.

B. ASTM International (ASTM):

1. D244 - Standard Test Methods for Emulsified Asphalts.

2. D2974 - Standard Test Method for Moisture, Ash and Organic Matter of Peat and Other Organic Soils.

3. D4972 - Standard Test Method for pH of Soils.

C. Indiana Department of Transportation (IDOT) – Standards and Specifications, Sections 621 and 914.

1.3 DEFINITIONS

A. Weeds: Included but are not limited to, Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

B. Noxious Weeds:

1. Harmful, undesirable, hard to control.

2. Include but are not limited to the list identified in IDOT Section 914.04.

1.4 PROGRESS SUBMITTALS

A. Section 01300 - Administrative Requirements: Requirements for progress submittals.

B. Seeding and Erosion Control Plan: At least 14 days prior to placing topsoil, submit to ENGINEER for approval CONTRACTOR's Seeding and Erosion Control Plan including, but not limited to, the following:

1. Seed mixture(s) and fertilizers for the Site landfill cover system and adjacent areas and application rates.

2. Time of year for planting such mixtures.

3. Methods of preparing seedbed, seeding, sodding, rolling seeded and sodded areas, and irrigation.

4. Methods to provide erosion control until seed is placed and grass is established (i.e., use of any or a combination of emulsifiers, tackifiers, mulches, adhesives, nurse crop seed, and erosion control matting or blankets).

C. Seed Certificates: At least 14 days prior to seeding submit certificates from seed vendors for each seed mixture required, stating botanical and common name, percentage by weight and percentages of purity, germination, and weed seed for each species.

1.5 CLOSEOUT SUBMITTALS

A. Section 01700 - Execution Requirements: Requirements for closeout submittals.

B. Maintenance Data: Include maintenance instructions, cutting method, and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.6 QUALITY ASSURANCE

A. Perform work of this Section in accordance with State of Indiana Soil Conservation Service and IDOT Standards and Specifications, Section 621.

B. Provide seed mixture in weatherproof containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.7 QUALIFICATIONS

A. Seed Producer: Established vendor capable of providing adequate seed quality and quantities.

B. Fertilizer: Established vendor capable of providing adequate fertilizer quality and quantities.

C. Installer: Company specializing in planting and establishment of multiple acre grading and planting projects with 5 years documented experience.

1.8 REGULATORY REQUIREMENTS

A. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver grass seed mixture in original sealed containers bearing seed Supplier's label and certificate indicating the content of species, grade, and mass. Seed in damaged packaging will be rejected. Label containers showing:

1. Analysis of seed mixture.
2. Percentage of pure seed.
3. Percentage of weeds.
4. Year of production.
5. Net weight.
6. Date when tagged and location.
7. Percentage germination.
8. Name and address of distributor.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

D. Deliver mulch and erosion control agent in moisture-proof containers showing manufacturer, content, and net weight (air dry).

E. Store materials in accordance with manufacturer's instructions and in a manner to prevent damage or deterioration.

F. Remove from the Site seed which has become wet, moldy, or otherwise damaged in transit or storage.

G. Store seed in weatherproof enclosures.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Section 01500 - Temporary Facilities and Controls: Requirements for temporary controls.

B. Do not apply materials over snow, ice, frozen ground, or standing water.

1.11 SEQUENCING AND SCHEDULING

A. Section 01300 - Administrative Requirements: Requirements for coordination.

B. Schedule seeding operations under optimum conditions during normal planting seasons.

C. Coordinate planting with specified maintenance periods to provide maintenance until acceptance by ENGINEER.

D. Seed areas within 10 days of completion of topsoiling.

PART 2 PRODUCTS

2.1 SEED MIXTURE

A. IDOT Section 621.06, Seed Mixture R or ENGINEER approved equal based on the quality of the soil used for the rooting zone and topsoil layers.

B. Grass Seed: Fresh, clean, new-crop seed harvested previous year complying with the tolerance for purity and germination established by IDOT, Section 914.04.

2.2 MULCHING MATERIAL

A. Free of weeds and other foreign materials, free of growth or germination inhibiting ingredients; manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material will become uniformly suspended to form a homogeneous slurry; dyed a suitable color to facilitate inspection of the placement of the material. When applied, capable of forming an absorptive mat, which will allow moisture to percolate into the underlying soil.

B. Straw Mulch: Oat or wheat, free from weeds, foreign matter detrimental to plant life, and dry; seasoned for spreading with mulch blower equipment.

C. Product meeting IDOT Section 914.05 or ENGINEER approved equal.

2.3 FERTILIZER

A. Material consistent with IDOT Section 914.03.

2.4 WATER

A. Clean, fresh, and free of any contaminants and substances or matter which could inhibit germination and vigorous growth of grass.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01700 - Execution Requirements: Verification of existing conditions before starting work.

B. Verify that prepared soil base is ready to receive work of this Section.

3.2 PREPARATION - SUBGRADE

A. Prepare subgrade to eliminate uneven areas and low spots. Maintain lines, levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds, and undesirable plants and their roots. Remove contaminated soil.

C. Remove surface debris, roots, vegetation, lumps, and stones in excess of 1 inch.

D. Obtain ENGINEER's approval of topsoil grade and depth before starting seeding.

3.3 SEEDING

A. Apply seed at a rate consistent with IDOT Section 621.06.

B. Apply by conventional seed drill.

C. Do not seed areas in excess of that which can be mulched on same day.

D. Do not sow immediately following rain or when ground is too dry.

E. Measure quantities of material by weight or weight-calibrated volume measurement.

3.4 FERTILIZING

A. Apply fertilizer prior to seeding in accordance with IDOT Section 621.05.

B. Do not apply fertilizer at same time or with same machine used to apply seed.

C. Lightly water to aid the dissipation of fertilizer.

3.5 MULCHING

A. Immediately following seeding, apply mulch to a thickness of 1/8 inch. Maintain clear of shrubs and trees.

B. Apply water with a fine spray immediately after each area has been mulched.

3.6 OVERLAP

A. Seeding and mulching shall overlap adjoining vegetation by 12 inches.

3.7 CLEANING

A. Section 01700 - Execution Requirements: Requirements for cleaning installed work.

B. Clean up immediately, soil, mulch, broken sod, or other debris spilled onto pavement and dispose of deleterious materials.

C. Take precautions and prevent contamination by seeding and mulching slurry of structures, signs, guardrails, fences, utilities, or other surfaces not specified to be landscaped.

D. Where contamination occurs, remove seeding slurry to satisfaction of, and by means approved by ENGINEER.

3.8 PROTECTION OF FINISHED WORK

A. Section 01700 - Execution Requirements: Requirements for protecting installed work.

B. Protect landscaped areas from damage.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Section 01200 - Price and Payment Procedures: Requirements for measurement and payment.

4.2 SEEDING AND MULCHING

A. Schedule of Prices Item No. 02921/1.

B. Measurement Basis: By the acre determined from the horizontal projection of a Site survey.

C. Payment Basis: Unit price. Includes preparation of topsoil, seeding, fertilizing, mulching, and watering.

END OF SECTION